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OF

NATURAL HISTORY,

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RELATING TO

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By the Banks of the Chu-Kiang. By ARTHUR ADAMS, Esq., F.L.S.

It is the season of the green leaf and flower. Close at hand the guava and the orange, their boughs bent down with grateful fruit, are mingled with the dark-leaved banyan, the privet-like Ancistrobolus, Psychotria elliptica with rich purple leaves, and Gardenia florida, always a favourite with the Chinese on account of its fragrant flowers.

Wasps and heavy-winged sawflies, green, black and yellow, haunt these village trees; and lurking among the foliage are spotted golden beetles, Sagra, Clythra and Eumolpus. Poised in mid air, motionless on vibrating wings, are clear-bodied Volucellæ and bird-like Bombylii. I spy the nest of a slender brown Sylvia artfully disposed among the bristling thorns of a Palinurus bush, well defended, snug, bidding defiance to snakes and weasels.

I come out upon the river and I find the banks of the Chu-kiang planted at regular intervals with dark li-chees, Chili bushes, broad-leaved bananas and peach trees, and I observe the fields on the opposite side yellow with heavy-eared rice. The broad river flows calmly by. Here and there, stretched out across the stream, are countless fishing stakes arranged in regular rows, with long black nets drying in festoons on the ropes that stretch from pole to pole. Little sampans are floating like so many waterfowl, drifting with the current, and laying down their lines with a hundred baited hooks; dusky half-clothed figures are seeking for river-mussels and cat-fish on the exposed mud flats; up the little creeks cluster hundreds of brown dome-roofed craft; while conspicuous over the low land are the square tanned sails of the trading junks sailing in the distant windings of the river.

I ascend a neighbouring hill, and from the summit become impressed with the beauty, fertility and dense population of the "Central Flowery Land." The brown sides of the Old World granite hill on which I stand are pitted with the graves of the humbler classes and honey-combed with the tombs of the wealthy. The graves and the moss-grown tombs are overrun and partially concealed by the Rubus parviflorus, the wild rose and yellow Chrysanthemum, while vines cling in graceful festoons about the scattered boulders. Among the showy flowers of Melastoma sanguinea and Osbeckia chinensis, I discover many beetles, including a glittering green Metallites, a small dingy Bruchus, a bristly Strophosoma and a globose Philopedon. Stretched below are green fertile plains, dotted with villages more numerous than the eye can count, sheltered in groves of evergreen fig trees. The rich alluvial plains are green with garden stuff, or golden with the ripe waving padi, and are watered by canals and intersecting rivulets like the water-meadows of England on a gigantic scale.

On approaching the villages I see the hanging roots and dark foliage of the Ficus nitida, and the hoary limbs of the great Bombax cepa, entirely bare of foliage, but covered with magnificent scarlet blossoms. The bamboos are really grand. Under clumps of this huge grass, which here grows forty feet high, I find both shelter and beetles. A pale yellow Chilocorus, a giant among lady-birds, is found adhering to the under surface of the leaves; a brown glistening lizard, a species of Scincus, rustles among the dry leaves on the ground, and mole crickets run timidly about or are seen scraping the earth with their large fore paws. Everywhere I look I find a beetle. In the grass a spinose Hispa; clinging to the stems a red and black Mylabris; on the wing a bright little Anthicus; on the ground a brown Serica and a glittering Chrysomela; under the oolam trees a dull green Euchlora; on the leaves in the sunny pea-fields Cetonia and Buprestis. My greatest prizes, however, are a large red Horia and a Callistes, a perfect little gem. Perhaps it may seem absurd thus to lavish praise upon creatures not usually regarded with feelings of love or admiration, but I confess I like them. "A beetle is a beauty in the eyes of its mother," says the Arabic proverb, and I may add in the eyes of many an entomologist also.

Before I leave the banks of the Chu-kiang or Pearl River I must beg the reader to visit with me the deserted quarries near the Second Bar Pagoda, and accompany me in a quiet stroll over Danes Island. The quarries form vast gloomy caves and overhanging water-dripping rocks. The walls of old Canton and the river forts have been constructed from granite obtained here, but that must have been long ago. The enormous moss-grown boulders and the heaped-up masses of old lichen-stained granite everywhere surround you, and you seem to be among the work of Titans. In the still dark pools are numbers of harmless water-snakes, swimming gracefully about or diving beneath the surface. The old caverns and ancient shady nooks are also a favourite haunt of the goatsucker and the brown owl, startling the intruder as they suddenly fly out from the deep silent chasms. I am also impressed on this occasion with the harmony of colour between two reptiles and the places they inhabit. One is a slender lizard, of a brownish green colour, hardly distinguishable from the blades of grass among which it lives, and the other is a Gecko, so freckled and spotted as to resemble very closely the weather-stained granite rocks among which it takes up its abode.

All around these quarries frown barren red-tipped hills, rough with scraggy fir trees, and crested here and there with wind-bent pines. On a brown fissured rounded hill a tall pagoda is conspicuous, and, buried in a sacred grove, at the base is a picturesque jos-house, while in the far distance are indistinct pale gray lofty mountains.

As I return to the ship I observe a water buffalo plodding steadily across a padi-field, the rude wooden plough turning up the soil behind her. Now these unwieldy ruminants appear to think with the Turk that "of all devils the very worst of devils is a Frank in a round hat." No sooner does she scent the "fanqui" than she stops abruptly, snorts, trembles, and is off. Nose in air and horns flat aback she splashes through the watery glebe, the plough at her tail. The vexed Chinaman gazes helplessly after his unruly charge; but soon, to the great relief of the disconsolate husbandman, steps up a little boy, who whispers soft nonsense in the vagrant's ear, and leads her back, a willing captive, by the rope in the cartilage of her nose.

Danes Island, like all the other islands in the river, rises from the bed as a primary granite mass, with green rounded hills covered with a scanty vegetation, and pitted with the scooped-out graves of many generations of Chinese. A layer, more or less deep, of red and white sandstone rests upon the granite, and, between the hills, are valleys with a rich alluvial bottom, where pumpkins, melons, rice, peas, beans, ground nuts and sweet potatoes form vast vegetable gardens. The terraced sides of the more barren hills are planted with the oolam or olive, the li-chee and the peach. The villagers are harmless, but now and then get into trouble for supposed insults to the British flag, but what then?—"Every day is not a Feast of Lanterns."

Under the shade of the dark-leaved fir trees, where repose the dead of the mild intelligent Parsees, I love to sit upon a gravestone and feast on the cool pink flesh of water melons. Anon comes panting up the hill an urchin—brown, pigtailed, bare-legged, breathless. He bears a home-made bamboo box, a crumpled leaf serving for a cork. This he eagerly withdraws, and reveals the head of a large yellow centipede, whose unpleasant body seems very much inclined to follow. This, offered with a smile of conscious pride, is a present for the "Esung." These village urchins are great allies of mine: they show as much ardour in the chase as any naturalist, nor could a legion of Ariels have served their master Prospero better than these dusky imps do me. Their narrow gleaming eyes see me discard the "disjecta membra" of the great black Copris. The dung of the buffalo is forthwith scattered to the winds, and dozens of the living beetles are disentombed and brought me. They know the haunts of skink, mouse, bird and beetle. Do I desire an ant lion? They are under the oolam trees, blowing away the sandy soil with their breath till they spy the lurking lion in his den. He hides in a hole on one side of the pit-fall, his long powerful jaws being just visible in the centre. As they scratch him out they sing a little ditty appropriate to the occasion. Do I want a frog? A slight pencil sketch is shown them: off scamper these pig-tailed Ariels, and in ten minutes as many frogs are forthcoming as would feast a dozen Frenchmen. Infants of tender years will join in the sport, and toddling up will bashfully offer a locust struggling in their tiny paws. One little fellow is bitten by a large spider which he has courageously seized, and, as he presents his prize, he points with tearful eye to his swollen finger.

The ants of this island are very interesting. One yellowish species, with very long legs and antennæ, builds large nests in the oolam trees by bending down and joining together the leaves. The jaws of the ants are strong and toothed, and pierce the edges of the leaves, when a viscid sap exudes which soon hardens in the air and cements the leaves together. Another ant, with a roundish body covered with a gray pubescence, forms cylindric holes in the ground with an elevated tubular shaft, an inch or more above the surface, formed of grains of sand. Another solitary ant jumps about the pathways like a Saltica or hunting spider, and is a curious elongated species with a great head and thorax, and with the mandibles produced in front forming a long pair of forceps curving slightly upwards. My friend, Mr. Frederick Smith, to whom I presented a specimen, told me its name, but I have forgotten it.

Although not specifically the same the flowers I meet with in my walks remind me of those in England. The Oxalis is yellow-flowered and not so pleasant an acid as our own wood-sorrel; the shepherd's-purse appears to be the same as ours; the groundsel is represented by Emilia sonchifolia, and the Persicaria is replaced by Polygonum chinense; the woolly Gnaphalium is like ours of waste places; instead of the bluebell we have here Wahlenbergia agrestis; and in place of the bindweed we find the trumpet-like flowers of Evolvulus emarginatus. By the margin of a running stream, springing in numbers from the fresh green sod, I see Spiranthes australis, a delicate little orchid reminding one of S. æstivalis and familiar Hampshire meadows. In the deep damp fissures of the ground the red coral-like corymbs of

Ixora stricta are conspicuous, and on the white dilated calyx-segments of Mussænda erosa I find clustered a pretty Hoplia with a silvery gray pubescence.

The long segments of the crimson-spotted flowers of Strophanthus arrest my attention as I approach the precincts of a village, and I stop to gather the sweet-scented corymbs of Clerodendron fragrans. I also sniff an odour not so pleasing, and peeping over a bamboo fence I observe a piggery! And this fact reminds me of the great difference between the social and physical condition of the pigs of the North and the pigs of the South of China. The pig of the South lies in a clean sty, and is well cared for. She has a short wrinkled face, glutton eyes, swollen cheeks, a sunken back, short legs and a pendulous belly, and she waddles placidly along with a kind of semi-somnolent complacency. The pig of the North, on the contrary, has to take care of himself, and, judging from his *physique*, he is able to do so. He is a black, hirsute, active and irascible pachyderm, with a lean body, long legs, a wedge-like head, a bristling crest, an inquisitive nose, a wicked vigilant eye, a straight tufted tail, and a shrill angry voice. And with this porcine contrast I conclude my observations of what I saw on the banks of the Chu-kiang.

ARTHUR ADAMS.

Artificial Fish Raising.—This most interesting process is now being exhibited in the window of the office of the 'Field' newspaper, No. 346, Strand, under the able superintendence of Mr. Buckland, from whose contributions to that valuable journal I select the following particulars. The ova are those of the salmon and trout. "The apparatus used consists of a series of troughs made of zinc, some 18 inches long, 4 inches deep, and 5½ inches wide; one side has been formed of glass that the good folks outside the window may see the ova resting on the bars, and also the young fish coming out of the ova. The ova are placed upon the glass rods or bars, which are fixed just far enough apart to hold them up. I cannot say for certain how long it is since these ova were taken from the mother fish. The less light the ova have the better; the boxes where they are placed should be covered with boards, or, better still, with coloured glass. The salmon eggs are a bright red colour; those of the trout nearly pure white. As the fish are hatched they fall through the glass rods upon which they are placed as eggs, and when I pay my daily visit I invariably find the eggs decreased in number, but the young ones in the tank below the rods much increased in number. So fast, indeed, have they hatched that I have been obliged to construct a new tank entirely for the young fry, of which (salmon and trout together) I have altogether, in the 'Field' window, nearly two thousand, as active as gnats. It is most interesting to watch the egg at the moment of hatching. If you have luck you may happen to be gazing on a particular egg, when of a sudden you will see it split in twain at the part corresponding to the back of the fish; you will then see a tiny head with black eyes and a long tail pop out, and the new-born creature gives several convulsive shudders in his attempts to quit himself from the now useless egg-shell. Poor little fellow! he can't manage to get out—the shell is too tight for him. I take, therefore, a soft hair-pencil, press lightly on the egg-shell: he seems to know I am his friend; he gives another vigorous kick or two, and is free: he has commenced life. If we judge from his motions he must enjoy life, for away he swims as fast as his tiny fins and wriggling tail will carry him round and round in a circle, and then plump down he goes to the bottom of the tank and reclines upon his side, breathing with his gills for the first time in his life. As to food, Nature has kindly packed up all the nourishment that it will want for some six or eight weeks, in a neat little bag or parcel which she has affixed to the body of the fish, in such a manner that it shall be gradually absorbed into the general system. This bag or umbilical vesicle is much too heavy for them, and soon brings them to the bottom, like a bullet at the end of a fishing-line. So far so good; but cannot we see and learn more about the young fish? Get out the microscope, and place a young new-born salmon under a low power, and you shall see one of the most beautiful sights ever beheld by human eye. You shall see the tiny heart, which is situate just underneath the lower jaw, going pit-a-pat, pit-a-pat; you shall see the blood at one instant in one cavity of the heart (where it appears like a red speck); at the next instant it is in the other side of the heart: and so it goes on, day and night, never ceasing, never tired—a great forcing-pump, propelling the blood to all parts of the body, and gradually building up the frame of a future king of fishes. I counted the pulse of the salmon when it was under the glass, and ascertained that it averaged about sixty in the minute. Just below the heart can be seen on the umbilical vesicle (when the fish is in the water) a bright red streak. Examine this under the microscope, and you will see that this red streak is in fact a main artery; with a high power you can see plainly the minute blood-disks coursing along between the walls of this elastic tube. The minor red streaks upon the umbilical vesicle can in the same way be made out also to be blood-vessels, containing blood-disks running along at a great pace. Again, down the centre of the transparent body of the fish can be seen, with the unassisted eye, two tiny streaks; the microscope shows that these also are blood-vessels, and that the blood in the one is running towards the head, in the other towards the tail. A more complete and beautiful demonstration of the circulation of the blood never was yet placed under a microscope. The eye is in perfect working order at the moment of birth, though the rest of the body is far from perfection. It is most curious to observe the effect of temperature on the development of the ova. Those at the 'Field' office began to hatch out some five or six days before those in the Zoological Gardens. The reason is obvious: the temperature of the water running over the eggs at the 'Field' office is 52°, at the Zoological Gardens in the open air it is 43° only, and these fellows have not as yet begun to open their egg-cases. Those, however, which I placed in the aquarium house at the Zoological are hatching out fast."

Salmon Ova not the Food of the Water Ouzel.—The notice in your paper of last Saturday (the 'Field') that one of these birds had been sent to Mr. Buckland for examination caused me to look over my notes on the subject, made in the spawning season of 1856-7. Up to that period I, in common with other preservers of salmon and trout, took it for granted that, because this bird is so constant a visitor on the salmon while that fish is spawning, it is solely for the purpose of feeding upon the ova, and, in consequence, thinking I was getting rid of an enemy, I took great pains to destroy as many as possible. Amongst those I killed twenty fell to my gun just as they emerged from spawning-beds, every one of which I at once opened from bill to gizzard. On examination, both before and after washing, with the naked eye and under the microscope, I could not in one single instance discover a trace of ova, neither of case of ova, nor of the oleaginous matter which forms the contents of the case; instead of this I found the stomach full of the larvæ of flies, whole and in fragments, and always more or less of fine sand. About this date I heard of the destruction of ova in the boxes at Stormontfield by the larvæ of the stone-fly, and it immediately occurred to me that I was destroying a most efficient assistant, and that the water ouzel was one amongst the many exquisite links constantly presenting themselves to the student of the natural history of this valuable fish. During the formation of the spawning-bed the salmon turns over gravel, in the interstices of which lie the larvæ of aquatic flies, to which the water ouzel is debarred access until so turned over by the salmon; and the more frequent the visits of this useful bird to the newly-turned gravel the freer will the spawning-bed be from these hurtful insects. This opinion subsequent experience has confirmed, and preservers of salmon will act wisely to protect, as a most able assistant, the falsely-accused water ouzel.—*J. H. Horsfall, in the* '*Field*.'

[A great number of observations on this subject have been published recently, all of them having the same object—to exonerate the water ouzel from the charge of devouring the ova of salmon. I am, however, far from being convinced that the stone-fly (Phryganea) is in its larva state "hurtful" to the salmon ova: having paid considerable attention to this subject I am inclined to think that the phryganidous larvæ are vegetable-feeders like the larvæ of Lepidoptera.—*Edward Newman.*]

Destruction of Trout Spawn by the Parents.—On the 9th of December last, whilst the keepers were netting the river Dunlop for salmon for my use, I examined a small stream on the bog noted for the quantity of trout which breed in it. We took a number of male fish—sea trout and river trout—before we caught a female. Observing a number of ova in the trough in which I deposited them for a temporary purpose, I was led to inspect their throats, and every male fish I examined except one had ova in its maw. What are we to think when the male trout in attendance upon the females in the stream feed upon the ova they help to fertilize? I had a still stranger account from a friend of mine who was getting a stock of breeding trout for the Ribble; and, although I have not his permission to publish it, I think he will pardon the liberty. He had taken seven pairs of trout, and had placed them, with Ramsbottom's sanction, in a small pool for safety until the time for manipulating had arrived. When these fish came to be examined it was found that all the females except one had entirely relieved themselves from their ova, and the seventh partly so, and that every fish, male and female, except the one which had only partially spawned, was absolutely gorged with ova. I never remember to have seen either of these incidents recorded before; and they are both capable of being verified by ample testimony. What wonder that trout should be scarce when both mother and father devour the eggs!—*Samuel Woodcock; Bury, Lancashire, January* 26, 1863. *From the* '*Field.*

Note on the Argentine.—Passing along the beach near here the other morning, I came upon one of the most resplendent little fishes which perhaps the British Seas can boast of: so beautiful, in fact, did the little creature appear, that it was some time before I could make myself believe that it really was a thing of life: its back was a little buried in the sand, so that nothing but its glossy and metallic side and its peculiarly marked belly were exposed to view; these glistening in the rays of the early sun, as it lay on the wet sand, having been but very recently left by the receding tide, made me doubt whether or not I was still in bed and dreaming. Stooping down, however, and taking the elegant little creature gently up in my hand, all doubt on the subject fled, and gave place to a thrill of delight, on discovering that I had found a prize, in the shape of a very fine specimen of an argentine (*Scopelus Humboldtii*). Three other specimens have been obtained on different occasions, but all within a few yards of the same spot: so much alike are these four that the most casual observer would at once pronounce them to be one species. I am not aware what Yarrell says of this species, but in a work since published the account of it is very meagre indeed, and differs, in some instances, from my fish. I am induced to believe, from the same work, that the probability of there being more than one species is a disputed point amongst ichthyologists. A short description of the one captured by myself may not therefore be out of place; the reader must, however, bear in mind that the description is that of a fresh specimen. In length my specimen is nearly two inches; in breadth, where broadest, scarcely half an inch. The back is of a dark glossy brown colour, marked along its whole length with two zigzag lines of a lighter shade, one being on each side the dorsal ridge. The sides are like a piece of the purest and brightest polished silver, and having a most remarkably and bright metallic lustre. The belly is of a slate-blue. The tail, which is very deeply forked, is of a grayish white, having a dark streak crosswise near its base. On the upper jaw, or rather lip, there are two kidney-shaped streaks, one on each side, of a bluish green, similar marks occurring on the lower jaw or lip, but in this case they are round; these, when the lips are closed, give the mouth a darkish appearance. From the under side of the mouth run six rows, three on each side, of little roundish dots or spots of a beautiful light or pea-green; the first, passing along the side of the head, ends beneath, but on a line with the back part of the eye; the second, which is lower down, terminates a little beyond the pectoral; the other (or rather others, for they go side by side) stretches along the belly, with a slight interruption at the vent, to the tail, being smaller and closer set as they proceed backwards. Properly speaking, however, these spots are not plain or simple markings, but are rather a series of minute shallow dimples or impressions, as it were; at least, so they appear to me. With respect to the second dorsal, it is quite visible, and is of a rounded form.—*Thomas Edward; Banff, February* 7, 1862.

Note on Limax marginatus of Müller.—There appears to be a deficiency, in both the English and German books, of any extensive descriptions of the interesting families of the Limacidæ, although I believe there are some excellent monographs, in French, of those inhabiting that land. Some time since Mr. J. F. Heyneman, of Frankfort, informed me that from the lingual dentition he was inclined to separate Limax marginatus and L. Gagates from the other slugs, and place them with L. vitrina. I am unable of my own knowledge to speak of their affinity in this respect, but I notice one habit in which L. marginatus differs from all other English and German slugs with which I am acquainted, and in which it assimilates to L. vitrina and L. zonites, namely in the period of ovipositing. On the 4th of February there had been a sharp white frost in the morning, but after that had passed away the day was mild, and I visited the timber yard of the Commercial Docks, and there found numerous examples in their usual abodes, and many in the act of depositing their ova. Some which I collected also expelled ova in the vasculum in which they were confined. They appeared only to bury their head in a chamber, like Helix pomatia. The egg is spherical, slightly elongated, transparent, of a golden brown colour, and a coriaceous covering. When placed in spirits of wine they turned to an opaque white.—*John E. Daniel; 10, Trigon Terrace, Clapham Road, February* 7, 1863.

Occurrence of Limax Gagates near South Shields.—Two or three years ago I found a small slug infesting some of the gardens in this neighbourhood, which I referred to the Limax Sowerbii, *Fer.* On forwarding some of them, a short time since, to my friend Mr. Alder, he kindly informed me that they were not L. Sowerbii, but the rarer L. Gagates, and that the species had not before been taken in the North of England. Most of the specimens obtained have been procured from a small garden, where it has occurred in very great abundance, as certainly not less than two hundred specimens have been collected during the last three years. Though a very shy and retired species, seldom venturing from its hiding-place in dusk or during dull wet weather, it is a most pernicious and destructive slug to tender transplanted annuals, doing more mischief in a short time than L. agrestis. The eggs of this species appear to be deposited in winter, and in April and May the young show themselves, having attained to the length of half an inch. This species is generally described as dark gray, but the generality of the specimens collected have been of a fulvous or tawny colour on the back, becoming of a paler hue towards the margin of the foot. One specimen has occurred which was nearly black. It attains to the length of more than two inches when in motion; when at rest the strongly carinated back is beautifully arched. It may be asked, how has it happened that this large and very distinct species has been overlooked so long?—has it been introduced recently?—and has it been brought to this neighbourhood in ballast?—*Richard Howse, in 'Transactions of Tyneside Naturalists' Field Club.'*

Entomological Notes. — The opening of the season of 1862 gave a fair promise of a better year for entomologists than the two previous seasons of 1860—1, and hope rose high in the breasts of those who had felt disappointed in having so many blank places still unfilled at the close of last year. Many young collectors then, I fear, gave up all hope of continuing in the pursuit of insects, because they had done so badly, and others thought it was not worth the trouble to go out catching them; but those who did keep trudging on, despite disappointments and the unpropitious fates, were no doubt amply compensated when those few fine, warm and really spring-like days, at the commencement of April, brought out numerous Andrenidæ and early Bombi, and made the hive-bees at the same time remarkably "busy." As the month wore on the little "spring dagger" moth was in profusion, and I picked several very fine specimens of the dark variety from the trunks of the beech trees on the Benton Road, not one specimen of which could I get last year. Towards the end of the month that beautiful "bumbler" fly (*Bombylius major*), which has contracted a habit of always falling on its broad back whenever the wind is a little stronger than usual, and from which position, with its long slender legs, it finds considerable difficulty in righting itself, was more plentiful than I had ever before seen it. How this insect revels in the hot sun, darting from one primrose blossom to another!—if but a shade passes it, it drops to the ground invisible: and now also the curious "oil beetle" (*Meloë proscarabæus*) was crawling about in all directions. Early in May I made several additions to my collection of bees, and several good beetles fell into my bottle. In June the ruby [?] tiger moth (*Euthemonia russula*) was anything but rare; I found it in the wood above Winlaton once, and it was especially plentiful on the links below Bamburgh Castle. At Gibside I took several good moths, among which may be noticed Xylophasia rurea, *var.* combusta, rare; the specimen was at rest on the fresh-cut portion of an ash-pole, rather a singular place for this insect, as the pale colour of the new wood contrasted greatly with the moth's dark wings. Further on in the same direction I caught another uncommon moth, Acronycta leporina, as it was flying softly across the road near where the oak wood has been cut down, on the right-hand side going to Rowland's Gill; and beyond that turnpike I captured specimens of Rhagium Inquisitor, Clivina collaris, and other beetles of uncommon occurrence, on my way to a small bog on the left-hand side of the road, where grows the sweet-scented willow (*Salix pentandra*), and where the greasy fritillary (*Melitæa Artemis*) was taken by Mr. Dinning; the beautiful daddy-longlegs (*Pedicea rivosa*) I also met with in this bog. From this time to the end of June insects continued to occur in tolerable plenty, and I collected many good specimens; and in July, when on the links beyond South Shields I found great numbers of the coast-chafers (*Anomala Frischii*), of which I could not find a single specimen last year; and I then added the dark purple variety, which is always very rare in England, to my series. The latter portion of the year has not been nearly so favourable for the development of insect life, and the autumn broods have certainly been below the average. Sugar I have found, throughout the summer, next to useless for the night moths. Many evenings which appeared propitious for these excursions I have returned home with empty boxes, or had to depend entirely on my net for captures; and I have heard similar accounts from other entomologists widely separated, and therefore conclude it to be a general complaint.—*V. R. Perkins, in 'Transactions of Tyneside Naturalists' Field Club.'*

On Removing Grease, &c.—I have lately received a letter from my esteemed friend Henry Doubleday, Esq., in acknowledgment of a copy of my little book the 'Insect Hunter's Companion.' With his permission I make an extract or two from that letter. Mr. Doubleday says, "I rather regret that Dr. Wallace's plan for removing grease was introduced, as I think accidents may occur from attempting to carry it out. I cannot understand how benzole can be boiled without incurring great risk of its exploding. A short time since a young man in this place was using some, and left the cork out of the bottle. He happened to move it near the candle, and the evaporation was so rapid that the candle, although some inches above, set fire to it, and it exploded like a gun, and the young man nearly lost his sight." I think it but right that the readers, whoever they may be, of my book should, as soon and as generally as possible, be made acquainted with the danger of an incautious use of this inflammable oil, and as the best means of doing so I have requested the editor of the 'Zoologist' to insert this notice. I should like to take this opportunity of stating that where, as in this and some other instances, I have given two or more methods of doing the same thing, it was to avoid the appearance of dogmatism, and also to give the beginner the opportunity of trying for himself which plan was the best. Mr. Doubleday remarks further, "I am not an advocate for the use of camphor (for keeping off mites; *J. G.*). It unquestionably tends to make moths greasy. If the under sides of the thorax and abdomen and the antennæ are carefully touched with a camel's-hair pencil dipped in a weak solution of corrosive sublimate (bichloride of mercury) they are for ever proof against mites and mould." Upon my asking for a little further information Mr. Doubleday very obligingly supplied me with the following. "You can easily try the experiment with regard to camphor. Take any moth which is at all liable to turn greasy, and suspend it by a thread attached to the cork of a bottle containing camphor. After letting the moth down into the bottle put the cork in tightly, and in a few days you will find the grease will liquefy and spread all over the insect. I believe that when insects are carefully touched with a weak solution of corrosive sublimate in pure alcohol they will never mould or be destroyed with mites; I mean those parts to which the sublimate has been applied; but if the thorax and abdomen are poisoned mites will very rarely indeed attack the wings, and they never become mouldy. A small piece of sublimate, about the size of a hemp seed, is sufficient for an ounce of alcohol. It should never be strong enough to give visible crystals on a non-absorbing substance (black)—a piece of blackened ivory for instance—when it it is wetted with the solution and allowed to evaporate. The best method of applying it is to take a small camel's-hair pencil and dip it in the solution, pass it along the antennæ, and then apply it to the under side of the thorax and abdomen. It will penetrate these parts in a second or two, and then the alcohol evaporates, leaving the sublimate in the insect." I am sure your readers will feel obliged for these valuable and suggestive remarks.—*Joseph Greene; Cubley Rectory, Doveridge, Derby.*

Habits of various Lepidoptera.—Arctia Mendica always came out of pupa between 10 A.M. and 5 P.M., generally in the afternoon. Odontopera bidentata always in the evening dusk, between 7 and 10 P.M.: as soon as the wings are expanded the insect retreats from the top of the box and fixes itself on one side of it close to the earth, with the head downwards and the tail and hinder extremity of the wings hanging forwards, like a well-hung picture. My Melanthia albicillata almost always came out of pupa either between 6 and 8 A.M. or between 6 and 8 P.M.—*F. Beauchamp.*

Spring Moths.—On the 15th of March, 1862, the Tæniocampas were plentiful on sallows; T. gothica early in the evening; T. stabilis not showing until T. gothica had nearly disappeared. Hybernia rupicapraria was rather common, and H. progemmaria abundant, sitting on the hedges with its wings at an angle of 45° from the twig and 90° from each other. Anticlea badiata, on the contrary (of which I took five males), sets up its wings after the manner of a butterfly; it is much wilder than H. progemmaria; when at rest, as in the day-time, its tail is raised like that of Pyralis farinalis: on the 19th of April I took a female, which laid me about one hundred yellowish white eggs, the larvæ from which fed up well on a garden rose, of which they seemed to prefer the flower-buds to the leaves: they are uncomfortable, round-headed, sawfly-looking creatures,—semi-transparent, too, so that when feeding on roses the anterior portion of the body is tinged with purple.—*Id.*

The late J. F. Stephens' Specimens of Lycæna Dorylas. — Since the publication of my remarks upon this species (Zool. 8402), I have examined the specimens contained in the cabinet of the late J. F. Stephens which were considered by him as identical with the Hyacinthus of Lewin, and given in the Museum 'Catalogue' as Adonis, *var. a.* They are certainly not Lewin's species, but merely ordinary specimens of Adonis; and the same may be said of the specimens marked "Ceronus, *Hub.*," which is a variety, in which the female is of nearly as brilliant a blue as the male. This variety is found near Bordeaux and other places in the South of France, but has not occurred in England.—*Henry Doubleday; Epping, March* 13, 1863.

Notes on Ino Globulariæ and I. Geryon.—I took these in company on the 19th of June, 1858, I. Geryon being the more abundant of the two. The following notes, made at the time, may prove interesting:—"I think I. Globulariæ is a little bluer in colour than I. Geryon, but the great point of difference is in their respective habits, I. Globulariæ being so much more active, and rarely, if ever, shamming death, as his more sedate brother frequently does. After I had brought them home (in pill-boxes), I always knew which boxes contained I. Globulariæ, because the moment I opened them a little way to drop in chloroform they began to flutter; while I. Geryon sat quietly till the fatal drug was administered. The whole differences were such that I scarcely ever failed to recognize I. Globulariæ flying. I am here speaking of the males only, the females being nearly similar in size." In setting the insects I observed that the body of the male I. Globulariæ was much longer and more tapering than that of I. Geryon. On the question whether I. Geryon be a variety or a species, I will only observe that we get the normal I. Statices in plenty within a mile or two of the hills where I. Geryon abounds, but that I never took them in company; nor did I ever take any form intermediate between them.—*F. Beauchamp.*

Lithosia molybdeola.—The last number of the 'Zoologist' contains a description of several species of the genus Lithosia. Among them there is a new species to which M. Guenée gives the name of molybdeola. My object in noticing it is to ask whether Mr. C. S. Gregson's name of sericea has not the priority. Mr. Doubleday thinks not; I have a strong impression that it *has*. Mr. Gregson, if he cares about it, can soon satisfy us on this head. If sericea be the first name given to this species I for one shall certainly use it, as I think it at least as good as the other, besides being an English insect and named by an English entomologist.—*Joseph Greene, Cubley Rectory, Doveridge, Derby.*

Description of the Larva of Melanthia albicillata.—Some eggs sent me from the North hatched about the end of June, and some that I procured in Sussex hatched about a week later. I had no bramble or raspberry at hand, so I tried them with several other plants, of which they took readily to wild strawberry. I soon, however, transferred them to bramble, on which they fed up very fast, being full-grown by the end of July. I should describe them thus:—Velvety, deep green, with a few short and rather bristly hairs. Head greenish brown, with three pale vertical stripes; interstices of segments yellowish, especially on the sides. On the back, at the posterior part of each of the segments from the 4th to the 10th, there is a triangular rather bright yellowish brown spot (looking red by contrast with the green ground colour), the apex towards the head bordered with dark brown, and having a dark brown tapering streak up the centre; the surface of these spots appears corrugated. Claspers and posterior part of anal segment brown. Spiracular line whitish, edged beneath on the first four and on the 10th and 11th segments with brown. Belly green, with numerous whitish lines and dots. The usual position of the larva is that of a bow, but it has a trick, especially when changing its skin, of hanging down with the body bent backwards almost at a right angle behind the 4th, and again behind the 9th segment, so as to resemble the outline of a very lanky letter E. The back is round, and the belly very flat; the body tapers rapidly from the 5th segment to the head. Its vivid colour and velvety texture render it a beautiful larva; but the perfect insect, when bred, seems to me almost without a rival for purity and exquisite delicacy of design. I should doubt whether in the range of natural objects a more beautiful line is to be found than that exquisite cool gray streak upon the rich creamy ground of the fore wing. It was the liveliest moth I ever bred, flitting about the moment I came into the room. All the specimens I took were in open places deep in the woods, not on the skirts; when flying they look very small.—*F. Beauchamp.*

Occurrence of Dosithea eburnata at Bangor.—Mr. B. Kendrick sent for exhibition a specimen of Dosithea eburnata, taken by himself on the hills overlooking the town of Bangor, about 8 P.M. on the 5th of July last. Thus a new locality has been discovered for Weaver's lost species. The specimen was fine and well marked, perhaps a little larger than the figure in the 'Annual.' Pterophorus tephradactylus was taken at the same time and place.—*Proceedings of the Northern Entomological Society, October* 4, 1862.

Economy of Scotosia undulata.—I took a female in 1861. She laid me some small oval whitish eggs on the under side of a sallow leaf, generally in the hollow by the side of the midrib or some other rib, often two or more on a leaf, but never adjoining each other. I transferred them to a young tree growing in a pot. As soon as hatched the larvæ spun a web resembling that of the Yponomeutidæ, and sometimes, like them, several together. When a little older they bent and fastened leaves together, and ate through the walls of their dwelling until they left only a skeleton, when they went on to another place, to behave in a similar manner. They were very sluggish, not taking the trouble to push their tails outside, so that when they had eaten the walls of their tent the lower part formed a bag full of "coprolites." They usually lay curled up in their tent, and all mine continued to dwell under cover until they went down. I think I never saw them outside, except when they were "removing," and once when they had eaten their plant down to the stumps; then they crawled about uneasily till fresh food was introduced. When full grown they were scarcely an inch long, and reminded me somewhat of the larvæ of Eupithecia venosata in their general appearance. I proceed to give a description of them. Short and stumpy, with a few very short hairs. Head small, shining, brown, the two upper lobes round and conspicuous. Dorsal line brown, bordered with a very slender much broken whitish line. Subdorsal line brown, broad, bordered on the upper side by a slender broken whitish line (perhaps *this* is the true subdorsal). Spiracular line broad, dirty white, puckered. Ground colour above the spiracular line varies from pale flesh-colour to dark brown; belly from pale gray to dark gray. In the dark specimens the dorsal line is scarcely perceptible, but the subdorsal (?) is perceptibly darker. On the upper side of each of the anal claspers there is a large blackish spot, in addition to which light specimens have a blackish spot on the centre piece of the anal segment. The pupa is in a rather slight earthy cocoon. I kept mine in a fireless attic. They began to emerge early in May, and the last made its appearance about the end of that month. I took great pains to continue the brood, but ineffectually, though I sacrificed a dozen specimens for that purpose, keeping them till they died in a large leno bag over a growing tree (which I stood out in the garden one night), and feeding them with syrup; some of them lived over a fortnight, but I had only a score of eggs laid, and they proved infertile. I should add that the perfect insect was very lively, so as to make it no easy matter to catch and box, without injury, three or four out of a small flower-pot.—*F. Beauchamp.*

Description of the Larva of Phibalapteryx tersata.—During the last week of August and the first fortnight of September, 1861, I beat a number of these larvæ, in company with those of Melanippe procellata, from Clematis, after dark. They are long, slender and tapering towards the head, which is small, flat and rounded. Ground colour very pale grayish brown. Dorsal line dark brown, very conspicuous and broad on the head, thence tapering to the end of the 4th segment, where it generally becomes invisible, reappearing, however, as a gray spot just behind the intersections of the segments, and on the 10th segment broadening into a conspicuous black spot, which tapers to a point forwards. Similar spots, but much fainter, can be traced on the 9th and 8th segments, and sometimes on the 7th. On the hinder part of each of the middle segments is a pair of spots of the same colour as the gray spots before mentioned, with which they form a triangle. Spiracular line slender, pale, edged each side with dark. Sides below the spiracles paler and rather ochreous. Spots and spiracles conspicuous, black, ringed with pale. Ventral line pale, rather broad, edged with a dark line of considerable but variable breadth. There are numerous longitudinal lines, and on many specimens transverse dorsal shades, especially on the middle segments. In some examples all the above markings are very indistinct, except the conspicuous black spot on the 10th segment. These larvæ come out at dusk to feed, usually holding on the edge of a leaf, and at the slightest touch dropping off, without leaving any silken thread to return by; when on the ground they curl into a regular St. Catherine's wheel. They are very lively at night, but quite the reverse by day. In habits they closely resemble the larvæ of M. procellata. The cocoon is rather slight and subterranean. The imago began to appear early in May, and continued till the middle of June. I had no difficulty in pairing them off, but what I may term their inveterate habit of "child-dropping," gave me great trouble; though nice Clematis sprigs were prepared, they persisted in scattering their eggs in the earth at the foot of the glass cylinder in which I kept the food, and as the eggs are brown it was difficult to collect them. In this habit the insect differs altogether from M. procellata, which lays its large white eggs upon the edges of the Clematis leaves. The imago is not very lively. —*F. Beauchamp.*

Ichneumoned Eggs of Pygæra bucephala.—On the 3rd of July, 1858, I found a batch of fifty-eight eggs of Pygæra bucephala on the under side of a birch leaf. I did not then know what they were, so I made the following description of them:—Size intermediate between those of Lubricipeda and vinula, hemisperical, prolonged into a very short cylinder at the base; the cylindrical part brown (just the colour of glue), the remainder, and by far the greater part of the egg, bluish white, with the top, however, conspicuously black; the whole surface shining, and (examined through a lens) appearing as if enamelled. On the 2nd of August small black ichneumons made their appearance in the winged state, having gone through all their changes in the egg-shell. I preserved the egg-shells with a number of the flies, which I shall be happy to present to you or to any of your readers.—*Id.*

Divorce and re-union of Platypteryx falcula.—About two in the afternoon I found a pair of these insects *in copulâ*. They separated, owing to my having endeavoured to remove them into another place, at about 5 P. M. About dusk the female laid three or four eggs. Next morning I found them again *in copulâ*, and they voluntarily separated about 1 P. M.; after which the rest of the eggs were laid.—*Id.*

Occurrence of Noctua sobrina at Rannoch.—Mr. G. H. Wilkinson exhibited a box containing a specimen of Noctua sobrina, taken by John Stafford at Rannoch, at sugar, in August last.—*Proceedings of the Northern Entomological Society, October* 4, 1862.

Note on Agrotis lucernea.—In the last part of the 'Transactions of the Northern Entomological Society' Dr. Herrich-Schæffer is charged with committing an error in stating that the specimens of A. lucernea found in the South of England are lighter-coloured and larger than those taken in the North. If this is erroneous I am answerable for it, as I sent a series of specimens to Dr. Herrich-Schæffer to show that this was the case, but I have seen nothing to cause me to alter an opinion formed from the examination of at least two hundred specimens, taken in the Isle of Wight, at Deal, in Wales, and near Edinburgh.—*Henry Doubleday; Epping, February* 18, 1863.

Note on the Irish Specimens of Dianthæcia capsophila.—Dr. Staudinger has kindly compared one of the Irish specimens of this insect with authentic specimens of the D. Nisus of Germar, and informs me that it is not identical with Germar's species. Boisduval's name must therefore be adopted for the Irish insect, which is totally distinct from all the varieties of D. carpophaga.—*Id.*

On the Determination of Dianthæcia capsophila.—I received the other day the Report of the December Meeting of the Northern Entomological Society, held at the house of Mr. Gregson. In the Proceedings I find the following entry:—"Mr. Greening brought a specimen of Dianthæcia capsophila of Boisduval, Newman, 'Zoologist,' &c., from Howth Lighthouse, which, on being compared with Mr. Gregson's series of D. carpophaga from North Wales, Cheshire, North Lancashire and Cumberland, was decided to be only a dark variety of D. carpophaga. Mr. Gregson regretted that the Society had not sooner worked out this question, but stated, as a reason for the delay, that the Society did not see the specimens until every one unconnected with it had failed to give a decided opinion, except in favour of Boisduval's name. Although the Irish insect does not agree with the description by Gueuée of D. capsophila, yet it does with some of his intermediate varieties, the same as some specimens do with his description of D. Nisus of Germar." With respect to this decision, I wish to say a few words. Did it never occur to the Northern Entomological Society, or to Mr. Gregson, under whose special influence this decision appears to have been arrived at, that there are other entomologists, both in this country and abroad, to whose very high attainments in Science, and superior acquaintance with insects, both British and foreign, some deference is due? In order to show to whom I refer allow me to go back two or three years. I took my first specimens of the insect in question in Ireland, in the summer of 1860. In November of that year I sent specimens to Mr. Birchall, at Liverpool, who showed them to Mr. N. Cooke; and after a careful examination and comparison with Guenée's work, they, particularly Mr. Cooke, came to the conclusion that the specimens were D. capsophila. Mr. Birchall then showed them to Mr. Gregson, who, although Mr. Birchall pointed out the distinguishing characters, insisted that they were only D. capsincola. On being informed of all this I picked out three of my finest specimens, and forwarded them to Mr. Doubleday. He, after a careful examination, informed me that he thought they were D. capsophila, but that, as there was not a specimen of that species in either the British Museum or Mr. Hind's extensive collection of foreign Lepidoptera, he would prefer sending one to M. Guenée before he gave a decided opinion. At the same time other specimens that I had sent to London had been examined by Messrs. Newman, M'Lachlan and others, who were so well satisfied of their identity with Guenée's description that Mr. Newman put a notice of the capture of D. capsophila on the cover of the 'Zoologist' for December, 1860. Mr. Gregson, finding out his mistake, immediately made his celebrated mathematical journey to the Cumberland coast, so graphically described by himself ('Intelligencer,' No. 225, p. 135), and obtained from Messrs. Tiltman and Nicholson, of Whitehaven, specimens of a Dianthæcia which he lost no time in announcing, at the meeting of the Historic Society, at Liverpool, as Dianthæcia capsophila (see Zool. 7362). Here, however, he rather overshot the mark, for when Mr. Nicholson, a short time afterwards, sent similar specimens to Mr. Doubleday, they turned out to be only dark varieties of D. carpophaga; and subsequently, when Mr. Gregson had collected and bred a number of the larvæ, he discovered and had to admit his error himself (Int. No. 258, p. 186). In July, 1861, Mr. Hind had received D. capsophila from the Continent, which, on being compared by Mr. Doubleday with mine, proved them to be that species; and at the same time M. Guenée returned the specimen Mr. Doubleday had sent him, having ticketed it "Capsophila, *Boisduval.*" This alone might be supposed to be sufficient to have settled the matter; but in the autumn of 1861, as Mr. Doubleday was making up a box of rare British Lepidoptera for Dr. Herrich-Schæffer, I sent him a specimen to enclose; and Herrich-Schæffer's description, showing the points of difference between it and D. carpophaga, is fresh in the minds of readers of the 'Zoologist' (Zool. 8292). Besides all this, I have the decided opinion of Mr. Bond in favour of the distinctness of the species. Now, in the face of all this the Northern Entomological Society, or at any rate a certain portion thereof, ventures, from the examination of a single specimen, and that, as I happen to know, not a fine one, to decide that the Irish species is only a variety of D. carpophaga. Certainly Mr. Gregson might with great propriety compliment the Society on having "worked out" a question in which he had so signally failed himself. He says that everybody unconnected with the Northern Entomological Society has failed to give a decided opinion, except in favour of Boisduval's name. That of course is a roundabout way of saying that everybody, with this exception, has agreed to give it that name; and, that being the case, it would seem hardly necessary to say any more about it, only that he deduces from this fact the somewhat remarkable conclusion that it is therefore advisable and proper for that Society to come to a totally opposite decision. He says, moreover, that the Irish insect does not agree with Guenée's description of D. capsophila, but with some intermediate varieties; and that some specimens agree with his description of D. Nisus of Germar. How, then, does it happen that several entomologists of first-rate ability simultaneously come to the conclusion that the Irish insect was D. capsophila, and that only from Guenée's description, since there were no foreign specimens to be procured for comparison? And how can Mr. Gregson undertake to give an opinion of Guenée's description, when it is well known that he professed to name specimens from that description which afterwards turned out to be D. carpophaga? With regard to D. Nisus, my kind frend Mr. Doubleday, to whom I am greatly indebted for the trouble he has taken in the determination of this and other species, has, I believe, communicated with Dr. Staudinger upon the subject, and the result will doubtless appear in an early number of the 'Zoologist.'—*Charles G. Barrett; Haslemere, Surrey, February* 27, 1863.

[I think that the Secretary of the Society would do well not to give any decision as that of the Society collectively; but assign each opinion to the member who expressed it.—*E. Newman*].

Note on Brephos Parthenias.—I succeeded in overcoming the reluctance of these lively insects to lay eggs, by enclosing several in a large glass cylinder over birch twigs in wet sand, feeding them with syrup: they were a week, however, before they gave in. The eggs are small, oblong, wrinkled and of a dirty grayish green, soon turning brownish; they are laid singly, or two or three together, just below a projecting bud or twig. The perfect insect is excessively wary. In collecting it we took our station close to a magnificent male sallow in full bloom, around which they had been sporting in some numbers before we approached. We frequently saw them coming up towards the tree, but when they came within a few yards they wheeled off, and would not settle till we moved.—*F. Beauchamp.*

Note on Tinea granella.—This very destructive little moth swarms in the granaries of Newcastle in myriads, and is quite as injurious to the corn-dealers as Calandra granaria or Cucujus monilicornis, the ravages of which have been most ably delineated by Mr. Bold. The larva feeds within the grain, and as soon as the weather begins to turn rather chilly these little white creatures, having fed themselves up, come forth and crawl all over the premises in search of some cracks or crevices wherein to undergo their transformations. If you go into any warehouse or even counting-house where grain is, in the beginning of autumn, you will not fail to see hosts of these larvæ making their way over sacks, counters, walls, windows, in fact over everything fixed or moveable on which the eye can settle.—*V. R. Perkins, in 'Transactions of Tyneside Naturalists' Field Club.'*

Life-Histories of Sawflies. Translated from the Dutch of M. SNELLEN VAN VOLLENHOVEN, by J. W. MAY, Esq.

(Continued from p. 8411.)

NEMATUS VIMINALIS, *L.*

Linneus, Fauna Suec. 1529. *Rösel, Ins. Belustigung,* Vol. ii. Wespen, tab. x. p. 4—7. *DeGeer, Mémoires* (German translation), Vol. ii. 2, p. 274, pl. 38, fig. 26—31. *Hartig, Aderfl. Deutschlands,* i. p. 220, No. 55, N. Gallarum. *Dahlbom, in Stett. Ent. Zeit.,* Jahrg. 9, p. 182.

Nematus niger, ore coxis, femoribus, tibiisque luteis, feminæ ventre rufo-flavo, alarum stigmate magno, nigro.

Although I have placed the above references at the head of this description, I by no means undertake to say that they all apply to the synonymy of this insect. I give the reference to Linneus on the authority of Dahlbom: this I am willing to accept, as I believe we are bound to retain, with a certain degree of reverence, the nomenclature of Linneus and Fabricius, in case no cause to the contrary can be shown; but, on the other hand, I am so convinced of the great difficulty, not to say impossibility, of distinguishing closely-allied species of insects by means of the short diagnoses or insufficient descriptions of these high-priests of our Science, that it is seldom worth while entering upon any controversy for the purpose of showing one's adherence to or dissent from the opinions of others in such a matter.

I have given all the other references, as they apply either to this species—of which two races or varieties appear to exist—or else to a second species, which is only to be distinguished from the present by the most minute characteristics. It even appears to me to be very probable that there are two species having the same habits, but living on two distinct species of willow. Although I have lately taken great pains to get both these species, I have not hitherto succeeded. If eventually, upon rearing the other species, it should be ascertained that it is actually distinct, the references will probably be found to apply solely to this latter, which must then take the name of Nematus Gallarum, *Hartig.*

In order to explain my meaning more clearly, I must remind my readers that De Geer speaks of galls on Sahlweiden (*Salix cinerea*, L.), and that Hartig mentions the same species of tree. My galls, on the other hand, are from the Salix repens. Besides this, the abovementioned authors speak of gray caterpillars; whereas mine were glassy white when young, and yellow or orange when full-grown. Lastly, I may add that for years, in a certain garden on the banks of the Maas, and the high sea-wall of Schieland, outside Rotterdam, were a number of willows which were every year covered with galls: these galls were at first green, and afterwards turned to yellow, but never became red; and I remember finding them tenanted by gray slate-coloured larvæ. Now, these may have belonged to another species, possibly De Geer's. Last year, when I visited the garden in question, with the intention of investigating this matter, I found the willows had been cleared away; and other willows standing on the same bank, and in the neighbourhood of, although at some distance from, the former plantation, had no galls on them. I had hoped that Dr. Wttewaal would have been able to meet with galls on the willows bordering the Yssel, but this has not hitherto been the case.

In the month of September galls may be found on the dunes in the neighbourhood of the Hague, and near Noordwijk (especially in the last-named place, behind the church-yard), growing on the hard short-leafed dune-willow: these galls look like cherries (see fig. 1). They are always attached to the under side of the leaf, and are very shining and quite destitute of hairs, so that they are very different from those mentioned by Hartig. Some are larger than others; the one represented is one of the largest: they are yellowish green, yellow or red; the surface is studded with several minutely granular brown elevations (a species of Uredo?). The gall is hollow, having a thickness of from 1 to 2 mm. About the end of September the full-grown larva may be found inside, with a quantity of rather dry excrement of a pale brown-colour. When young the larva is almost translucent glassy white, the head gray; when full-grown it is yellow or orange-yellow, length about 1 centimetre. Head shining, obscure yellow, with two elliptical black spots on the sides, in which are the eyes; the jaws are clear brown. Each segment of the body is divided into three folds, each of these bearing some indistinct slightly projecting wart-like eminences; in some individuals a brown spot was observed on the abdomen close to the anal valve, in all a double black spine above the anus.

These larvæ have twenty legs, all yellow or yellowish white, and more or less translucent. The larva is represented at fig. 2, plate 10. During September and the beginning of October they gnawed round holes in the galls, and made their way out; and after creeping about for some time they buried themselves in the sand which I had placed at the bottom of their bottle.

In the spring I examined the sand, and found some cylindrical cocoons, rounded at both ends, entirely covered externally with grains of sand, as shown at fig. 3. Internally the walls were chestnut-brown, shining, smooth; on holding a piece up to the light it can be seen that the cocoon is made up of transverse and not of longitudinal fibres. The larva remains in the cocoon without change until the month of March, only becoming a little shorter and stouter.

At the end of March I found a pupa in one of the cocoons; of this I made a drawing (see fig. 4). It was of a greenish white colour, with reddish white wing-cases, and singularly attenuated for a tenthredinous pupa. The first imagos made their appearance on the 8th of April; these were a male and a female: during the following twelve days others came out. From general characteristics and the neuration of the wings it is evident that they must be regarded as belonging to the genus Nematus, which is also shown by the antennæ. Both sexes are about the same size, namely, 6 mm. long, including the antennæ 1 centimetre. Expansion 13 mm. Male shining, more or less brownish black; the first three joints of the antennæ are black on the upper surface, reddish brown underneath, all the others being reddish both above and below. Head black, except that from the eyes downwards the colour is pale yellow; jaws black; palpi obscure yellow, black at the base. Legs reddish yellow, only the coxæ and a line on the under side of the femora black; the last two or three joints of the anterior and middle tarsi, and the entire posterior tarsi, are brown or brown-black. The tegulæ and the nervures at the base of the wing are reddish yellow; the remaining nervures black; the wings themselves strongly iridescent. The stigma is particularly large. The last segment of the abdomen is reddish yellow on both surfaces. This description is illustrated by our fig. 5.

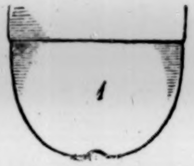
The female differs from the male in the following particulars:—The antennæ are entirely black both above and beneath, or at most have but a tinge of brown on the last two joints. The margins of the collar are obscure yellow, the coxæ and apophyses straw-colour. The tarsi of the first and second pair only bear little brown points, and in the posterior pair the first two joints of the tarsi are yellow, and the last three brown or brownish black (fig. 6). The whole of the under surface is obscure greenish red; for the rest the abdomen, as also the ovipositor, pitchy black.

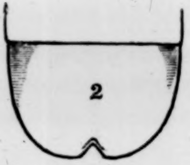
During the first two days after their appearance the movements of these sawflies were very quick; nevertheless I did not see them pair, and the insects soon died. I suppose that in their free state they extract the nectar from the flowers of the catkins of the willow, and so prolong their lives for a few days. I should much have liked to have observed the laying of the eggs, and the commencement and growth of the galls; but this is not practicable, unless one resided in the immediate neighbourhood of the willows on which the animals live; I am consequently unable to give any information as to where the egg is deposited; it is, however, most probable that the female makes an incision in the mid-rib on the under surface of the leaf, and there places her egg. Meanwhile De Geer states that the galls occur on little stalks, which circumstance appears to me improbable. I have not observed stalks to any of the galls in my possession, about fifty in number.

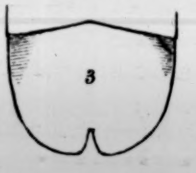
I should much like to be able to compare the present species with the other species or variety living on the willow growing by the waterside.

Oxypoda umbrata.—In January last I captured, at Highgate, an Oxypoda which appeared different from any member of that genus hitherto considered British, and by the kind assistance of Mr. Waterhouse I am enabled to record it as Oxypoda umbrata, *Mann. Brach.* 70, 5; *Erichs. Gen.* 144, 5 (Aleochara umbrata, *Gyll.*, *Sahlb.*), a species new to our lists. It is shorter and much narrower than O. opaca, and not quite so dull as that insect; black, clothed with fine pubescence; the elytra pitchy brown; base of antennæ and legs rufo-testaceous, and having in the abdomen (which is attenuate at the apex) the entire terminal segment, the greater part of the penultimate and the hinder margins of the remaining segments ferruginous. The antennæ are as long as the head and thorax, not so long or incrassate as in O. opaca, and with the terminal joint shorter and more blunted; the thorax is convex, rather shorter than its breadth, deflexed at the sides, especially in front, where it is slightly narrowed, and with all its angles obtuse. It appears to be the most finely and closely punctured species of the genus, and may be known from O. longiuscula by its more convex form and much shorter antennæ, in which the terminal joint is also much smaller. I took an entirely jet-black variety of O. longiuscula at Boston lately. It seems a very variable species, and when alive resembles a Calodera more than an Oxypoda.—*E. C. Rye; 284, King's Road, Chelsea.*

Notes on Philonthus temporalis and allied Species.—When noticing Philonthus punctiventris of Kraatz, in the 'Entomologist's Annual' for the present year, I made some remarks as to the probability of P. temporalis being also a species found in England; and having recently been enabled to compare Mr. Waterhouse's supposed specimens of the latter (and also another example detected by me among Brachelytra belonging to Mr. T. J. Bold, of Newcastle) with the original description given by Mulsant of the insect in question, I can now confirm my former opinion. Philonthus temporalis of Mulsant (Opusc. Ent. 2me Cah. 1853, p. 73) must therefore be added to our lists. It is about the size of P. punctiventris, but not so parallel in shape, the elytra being more ample, decidedly æneous in colour, and with rather less distinct punctuations, which are slightly rugulose transversely; the abdomen is rather more closely punctured, and has the lower surface less thickly punctured than the upper; the antennæ are entirely black and somewhat broader, having the penultimate joints more transverse, but not so wide as in P. æneus or P. carbonarius. The head and thorax are set with long stiff black hairs, and the former has numerous coarse punctures behind the eyes, the basal joints of the anterior tarsi in the male being very slightly dilated; in all which characters it resembles P. punctiventris. The sixth segment of the abdomen, in the male, beneath has a shallow rounded notch in the centre of its hinder margin (fig. 1); whilst the male of P. punctiventris exhibits in the same place a much deeper and wider emargination (fig. 2); in both of these species the edge of the fifth segment is entire and straight, whereas in the males of P. æneus the fifth segment beneath is somewhat emarginate for its entire breadth, and the notch in the sixth segment is more decidedly acute than in P. punctiventris (fig. 3): the females of all these insects appear to present no distinguishing characters in this region, having the apex of the sixth segment beneath obtusely rounded. Mulsant does not notice the above character of the male of P. temporalis, and only refers to the female; I am, however, tolerably confident on the point, having found precisely the same emargination in two of the specimens examined by me, and which are both palpably males, the third example being a female. P. æneus and P. carbonarius may be at once known from their allies by the decidedly transverse penultimate joints of their antennæ, the former also being easily separated by the very fine and close punctuation of the upper surface of the abdomen in both sexes, and by the broad basal joints of the front tarsi in the male: P.







carbonarius is not so metallic in colour, the front tarsi not dilated in the male, and the punctuation of the upper side of the abdomen more distinct and remote. Underneath the sexual characters of these two species are very similar. When looking over the specimens of P. punctiventris in my own collection and in those of my friends, I find certain examples with longer antennæ than the rest; they do not, however, present any structural differences, but nevertheless seem to accord very closely with the description of P. tenuicornis given by Mulsant (*loc. cit.*); and it seems strange that Kraatz (Ins. Deutschl. p. 574, Note) should compare the latter species with P. æneus and P. carbonarins instead of P. punctiventris, which it must certainly resemble more than either of these. I have not as yet been able to see a typical specimen of P. tenuicornis, but probably some of your readers may be in a position to oompare P. punctiventris with this species; if so, I should much like to know their points of difference.

I have in my collection a fresh specimen of P. lucens of Mannerheim, taken in Scotland by Mr. H. Montague; and Mr. Bold has also sent to me for comparison another example taken by himself. This species is compared both by Kraatz and Mulsant with certain of the above-mentioned insects, and I mention it in order to dispel any idea that specimens of P. politus (of which it is a near ally), with the under side of the basal joint of the antennæ discoloured or darkened, could possibly be mistaken for it. Its antennæ are much shorter, the joints being more transverse; the legs are not so long, and the punctuation of the elytra is much coarser.—*E. C. Rye; March* 18, 1863.

Proceedings of Societies.

Entomological Society.

March 2, 1863.—Frederick Smith, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be returned to the respective donors:—'Proceedings of the Royal Society,' Vol. xii. No. 53; presented by the Society. 'Annales de la Société Entomologique de France,' 3me Série, Tomes 4, 5, 6, Années 1856, 1857, 1858; by the Entomological Society of France. 'Anatomie, Physiologie, et Histoire Naturelle des Galéodes;' by the Author, M. Léon Dufour. 'Wiener Entomologische Monatschrift,' Band vi.; by Herr Julius Lederer. 'Stettiner Entomologische Zeitung,' Jahrg. 23, Nos. 10—12, and Jahrg. 24, Nos. 1—3, and Beilage; by the Entomological Society of Stettin. 'The Canadian Naturalist and Geologist,' Vol. viii. No. 6; by the Natural History Society of Montreal. 'The Zoologist' for March; by the Editor. 'The Journal of the Society of Arts' for February; by the Editor. 'The Intellectual Observer,' No. 14; by the Publishers. 'Jahrbücher des Vereins für Naturkunde im Herzogthum Nassau,' Bd. 14, 15, 16; by the Society. 'The Reader' for January and February; by the Editor.

Election of Subscriber.

Edward Parfitt, Esq., of the Devon and Exeter Institution, Exeter, was ballotted for and elected an Annual Subscriber to the Society.

Exhibitions, &c.

The Secretary read a letter from Mr. Abraham Edmunds, of the Tything, Worcester, correcting an error in the Report of the Meeting of the Society held on the 5th of January last: of the varieties of Lepidoptera exhibited by Mr. Stainton on that occasion, on behalf of the Rev. E. Horton, part only were the property of Mr. Bibbs; the Vanessa Atalanta, Arge Galathea, Arctia Caja and Eriogaster lanestris, belonged to and were captured by Mr. Edmunds.

Mr. Bond exhibited a specimen of Lycæna Dorylas, believed to have been captured in the West of England in 1862; two specimens had been sent to Mr. Bond as varieties of L. Adonis, having been taken, in ignorance of their specific distinctness, out of a large number of insects belonging to Mr. W. Farren, of Cambridge.

Mr. Waterhouse exhibited certain British species of the genus Mycetoporus, with the view of correcting an error into which he had fallen, that of confounding the M. longulus with M. lepidus. Mr. Waterhouse observed, "When I formerly examined the British Mycetopori, in order to determine and catalogue the species, I possessed only old specimens, not in a favourable condition for displaying their characters; but I have now before me not only a series of fresh and well-preserved British specimens of both species, but likewise continental specimens forwarded to the British Museum by Dr. Kraatz. The M. longulus of Mannerheim, Erichson, Kraatz, &c., appears to be not uncommon in gravel and sand pits in the neighbourhood of London. In some respects it is intermediate in its characters between the M. splendens and the M. lepidus. In size and form, for example, it is intermediate. Its colouring resembles that of M. splendens, being black (if we except the pale legs and basal joint of the antennæ), with bright red elytra, in which the region of the scutellum and the lateral margins are dusky, but in other respects immaculate. It differs from this insect in being rather narrower; in having the antennæ longer and less stout, the four penultimate joints being less strongly transverse; in having two punctures, placed obliquely, on either side of the disk of the thorax; and in having the abdomen more thickly punctured. Most of my specimens of M. splendens have the abdomen entirely black above, but in some the edges of the segments are rufo-piceous. My specimens of M. longulus have the abdomen of a less pure black, being somewhat pitchy; and the edges of the segments, in all, are rufo-piceous.

"This insect differs from M. lepidus in having the sides of the body less parallel, the thorax being broader behind, and followed by broader elytra, and a more attenuated abdomen; the antennæ are rather longer, as are likewise the legs.

"In M. lepidus the colouring of the body is very variable, ranging from nearly uniform rufous to pitchy black; often it is pitchy, with the elytra more or less rufous at the base. Here the general colour of the thorax and elytra is generally the same, or very nearly so. In a long series of M. lepidus now before me, I do not find any specimens having uniformly bright red elytra, accompanied by a black thorax. It has two punctures on each side of the disk of the thorax, and sometimes three or four. On the apical half of each elytron may be seen usually two punctures in a faint stria situated between the sutural stria and the submesial one. In M. longulus these supplemental punctures on the elytra are often wanting.

"The Ischnopoda melanura of Stephens, which is given in my Catalogue as synonymous with Mycetoporus lepidus, should be transferred to the M. longulus, *Mannerh.*"

Mr. Waterhouse also exhibited the insect which stands as "Boletobius castaneus" in Messrs. Hardy and Bold's 'Catalogue of the Insects of Northumberland and Durham,' p. 107; it was regarded by Messrs. Hardy and Bold as identical with Megacronus castaneus of Stephens, but Mr. Waterhouse stated that, upon examination, he found it a perfectly distinct species. M. castaneus of Stephens' collection was certainly an immature specimen either of Boletobius analis or B. cingulatus; formerly he thought it was the latter, but upon re-examination he was inclined to regard it as the B. analis. The B. castaneus of Hardy and Bold, Mr. W. thought, would probably prove a species of Dr. Kraatz's genus Bryoporus, but as he was unable to examine the parts of the mouth, the maxillary palpi only being visible, he was left in doubt. The maxillary palpi were short and moderately stout, and the terminal joint but a trifle shorter than the preceding joint, and of an elongated conical form. This form of palpus was very distinct from the elongated slender maxillary palpi seen in the typical species of Boletobius (such as B. atricapillus, &c.); it approached more nearly, however, to that seen in species of the section Megacronus, *Steph.* (= Bolitobius, Sect. 1 of Kraatz), and could scarcely be said to differ from that of Bryoporus rufus. The insect was smaller and narrower than B. rufus; had shorter and stouter antennæ; and had the elytra impunctate, excepting the punctures in the ordinary discoidal stria, and that of the suture, in each of which there were but about five somewhat indistinct punctures. The head was short and nearly round, as in B. rufus and Mycetoporus splendens, and, indeed, in size, form, and proportions, it greatly resembled the last-mentioned insect, from which it differed chiefly in the greater development of the terminal joint of the maxillary palpi; in the antennæ being rather stouter, the basal joints shorter, more especially the second, fourth and fifth joints; the punctures on the striæ of the elytra fewer and less distinct; the abdomen less thickly punctured (the basal segment nearly impunctate); and, lastly, in the colouring, which was rufo-testaceous, with the head rufo-piceous, the abdomen pale castaneous, and the antennæ black, with the exception of the three basal joints. The above comparisons were made with Mr. Hardy's specimen, which that gentleman had forwarded for inspection.

Mr. Waterhouse also exhibited two specimens of a British species of Homalota, which had not hitherto been recorded in our lists; he regarded it as the H. oblonga of Erichson and Kraatz; one of his specimens was taken in the neighbourhood of London; the locality of the other had not been noted.

Papers read.

Prof. Westwood read "Descriptions of two new Australian Lucanidæ," under the names of Lucanus carbonarius and L. Howittanus.

The President read "Descriptions of Brazilian Honey-Bees belonging to the genera Melipona and Trigona, which were exhibited, with samples of their Honey and Wax, in the Brazilian Court of the International Exhibition of 1862."

New Part of 'Transactions.'

Part 5 of Vol. i. (third series) of the 'Transactions,' being the first Part published in 1863, was on the table.—*J. W. D.*

Additional Remarks concerning a Dormouse.—October 11th. I have observed for some days past that it has been unusually sluggish, seldom leaving the box compartment of the cage; and to-day, for the first time, the nuts are untouched, and, though the weather is unseasonably mild, I think it may be about to hybernate. It rarely creeps forth till towards midnight, when all is still, but on seeing me is not greatly alarmed, or it would retreat at once to its box; however I have occasionally observed a tremulous motion of the whole body, when, fixing its eyes on one, at the slightest noise or motion it will disappear. Sometimes, however, it will frisk about, running up the wires, spinning the cage round; and when in a playful mood the least touch or motion will cause it to renew its gambols, which seemingly it greatly enjoys, though occasionally throwing a summerset. Having managed to escape once, it has not been allowed much liberty. On opening the door of the cage to feed it one night it suddenly sprang out, and, concealing itself, finally managed to effect its escape, but was seen a day or two after running about the garden. Having quite given it up as lost, I was not a little surprised on a subsequent day to hear that it had made its appearance in the kitchen (the only room with a fire), and taken up a position on the mantel-piece, four feet eight inches from the floor, but only two feet from the back of a chair near it, from which doubtless it had sprung up. Having allowed itself to be recaptured it was replaced in its comfortable cage, from which it has made no further attempts to escape, apparently satisfied that it might go farther and fare worse. Its escape, or rather safe return, is somewhat remarkable, seeing that there is a cat in the house and innumerable cats out; however, I have observed on more than one occasion that the cat takes no notice of it, even when placed close to the bars of the cage, turning away unexcited and unconcerned. This may, however, partly arise from her having become familiarised with it, and would account both for its safe escape and return; but the dormouse being perfectly scentless may not be so attractive as the common mouse, which has a peculiarly strong and overpowering scent. It is by no means so voracious as the common mouse, not consuming, on an average, more than a nut or two a-day, but preferring them to most other kinds of food, though partial to apples, the peel of which it is careful in removing. It is a thirsty creature, requiring a daily supply of water. 12th. On looking into the box this morning found the mouse coiled up, and in a sound sleep, but that it had been on the move during the night is proved by the disappearance of the nuts. 17th. Up to this date there has been nothing new to record, but this morning at half past eight I found the mouse completely coiled up in its lair, so that on being handled it but slightly relaxed; however, it had been on the run during the night as usual, and had fed. It remained in a deep slumber up to half past four P. M., when it awoke and began to feed. Having repeatedly observed it up to eleven P. M. it was still awake. Thinking from its sluggishness and drowsiness of late that it might be about to hybernate, I placed wool, slips of cloth and fine paper between the bars. 18th. At eight A. M. found that the greater part of the materials had been carried during the night into the box, which was completely filled up to the lid. On removing some of the superincumbent wool the mouse was found rolled into a complete ball. 19th. It has fed during the night, and more wool and cloth taken to its lair, where it has remained in a state of torpor during the day up to eleven P. M., when last observed. 20th. Though completely imbedded in wool, and asleep, I find it has been in the cage during the night, and fed too, though very slightly. Its bodily functions are apparently on the point of suspension. The weather, though still mild, is cooler, the thermometer having yesterday at one P. M. fallen to 51°, but has during the greater part of the month been nearer 60°, and occasionally a degree or two higher. 21st. It has in the course of the night eaten a small portion of nut, but has continued in a torpid state up to twelve P. M., when last seen. It is now pretty clear that it is generally near midnight ere the dormouse begins to feed, though it may occasionally be on the move an hour or so earlier. 22nd. Though the nuts have been nibbled there was very little eaten last night. On raising the lid of the box at eleven A. M. I found the mouse wide awake. Thinking it might require water some was placed before it, and, though closely watched, began to drink at once, lapping it up for a minute or two, seemingly much parched, which may partly account for its eating so little during the night. The last days of October and the month of November were passed much in the same manner, the mouse sleeping during the greater part of the day, but invariably sallying forth at night to feed. Fearing it might be kept too warm I removed it to a large spare room, but then finding it chilled of a morning I replaced it at night in a room where there had been a fire during the day, and it seemed improved by it, but showed no further symptoms of hybernating. The extreme mildness of the weather has doubtless been the chief cause of its wakefulness, though noises may have had something to do with it, as I have frequently observed it alarmed at any sound or whistle, however slight. It continued to feed well, and was apparently in its usual health up to about the end of November; it then began to fall off in condition, gradually taking less food, but drinking as freely as ever. I also remarked that it no longer removed the refuse food out of the box as it hitherto had done, or kept its lair clean. Apparently it was not suffering, as it slept on much as usual, and when found dead on the 8th of December was coiled up as if fallen asleep. There is little doubt but that, like the common mouse, it is nocturnal in its habits, though I am satisfied that it is to little purpose endeavouring to carry on observations on any animal kept in confinement, and probably not fed either, on its natural food : as well attempt to study the habits of the Royal Bengal tiger caged in the Zoological Gardens. The dormouse for instance; who knows on what it feeds in its wild state? We have most of us doubtless a vague idea that, like the squirrel, it is a nut-loving animal, and so it is; nevertheless my observations lead me to believe that being fed solely on nuts creates an unnatural degree of thirst, causing it to drink immoderately and injuriously, whereas in a wild state it may have more succulent food, probably seed-grasses and other herbaceous plants, wet too with the evening or morning dew. Though unable to fix the time of hybernating, still there is reason to believe that it is about the middle of October, for it was not until then that the dormouse seemed disposed to set its house in order, though there were always some materials at hand. It would also appear that the nest —at all times a loose and rough fabric—is very expeditiously formed; for the one referred to must have been constructed in a very few hours, but then it was not matted or woven together, and would have fallen to pieces if handled. Fully aware that this is but a slight and imperfect sketch I would point out the desirableness of its being sought out and observed in its native haunts at all seasons; we might then have some reliable information respecting its habits, food, &c., and time of hybernating. With regard to the latter, though it may be determined in some degree by the weather (as in the migration of birds), it is not reasonable to suppose that it can be greatly influenced by it, or it might not of a mild winter—such as this for instance—hybernate at all.—*Henry Hadfield; Ventnor, Isle of Wight, December* 16, 1862. [See Zool. 8025].

Occurrence of the Otter near Bath.—A fine specimen of the otter came into my possession to-day in the flesh. It was killed on the canal bank near this town. It had most probably wandered from the Avon close by.—*H. Blake-Knox; 49, Pulteney Street, Bath, March* 4, 1863.

Introduction of a new and useful Fauna into Australia.—It seems that an Association called the Victorian Society has been formed at Melbourne with this object. The 'Melbourne Argus' gives us a Report of the last annual meeting, showing the progress already made. After stating the objects of the Society it proceeds as follows. "Having thus reminded our readers of what is the proper aim of the Society, let us see how far this end has been hitherto furthered. In stating this we shall take the list in the order in which Professor M'Coy gives it in his Lecture, although he does not confine himself strictly to animals actually new to the colony, for he begins with the oyster. There can be little doubt that the work of increasing our supply of this first of all purely natural delicacies properly belongs to a Society like this; and this being granted there can be no doubt that it should stand first on the list. The oyster, then, has engaged the attention of the Society during the year; and the Professor tells us that the measures suggested for the preservation of the oyster-beds on our coast have been partially adopted by the Government with beneficial results; 'and in the coming year the experience acquired by the French Government in the formation of artificial oyster-beds, and the preservation of the young, will be applied, as far as is in our power, to the extension and improvement of those on our own coasts.' If only the Society succeed in obtaining for us a good and lasting supply of this delicate morsel it will merit the warmest thanks of the community. Among the *Insecta*, which stand next, we are to have the Arrindy silkworm, which has an additional value to us here, because it thrives on the castor-oil plant, which grows in the colony 'as a perfect weed;' and the Ligurian bee, famed for the quality as well as the quantity of its honey. Of the Crustacea it has been attempted to bring only the English crab and lobster, shipped by Mr. Lachlan Mackinnon. These died on the voyage, but, as with the salmon, the failure itself proved the feasibility of the experiment, because the causes of failure were manifest and are preventible. The Murray lobster, scarcely inferior to the English, has been successfully acclimatised in the Yarra. Of the fish, the first, of course, is the salmon; and as to the failure which has hitherto attended the attempts to introduce it we need only repeat, in Professor M'Coy's words, what has been more than once stated in the colums of the 'Argus,' that 'these failures are only looked upon by all concerned in them as indicative of success, and,' he adds, 'we are trying again.' But English bream, dace, tench, roach and carp have already been imported; the Yan Yean reservoir has been stocked with tench, and the noble Murray cod is now at home in the Yarra. Among birds we have the ostrich, the great crowned pigeon, 'a species of delicate flesh, nearly as large as a guinea-fowl,' the curassow, 'as large as small turkeys, and equally good for the table.' These have already been introduced by the Society in some numbers and distributed. The common pheasant has been introduced in large numbers by the Society, who 'may claim to have already acclimatised it.' The English partridge, too, has now been acclimatised; 'so that, after a few years, we may let, at certain seasons, the sportsmen indulge their bumps of destruction to at least a moderate extent on them.' Besides these Professor M'Coy tells of numbers of other birds already here or on the way to our shores. Of quadrupeds the hare and rabbit have been introduced, 'and the latter so thoroughly acclimatised that it swarms in hundreds in some localities.' Then we have two 'species of the Brahmin bull,' and more are coming; several kinds of deer, including the red and the fallow. Of the llamas we at present possess thirty-eight, and 'five hundred more alpacas are expected in a few weeks, to be landed by Mr. Duffield, as a portion of fifteen hundred to arrive.' These, as well as many of the deer and goats, are intended for 'some of the highest mountains in Gipps Land.' From South Africa we are to have several of the most valuable of the antelopes, of which the oryx and the koodoo are expected first; and finally, says the lecturer, that finest of all African antelopes the eland, 'a species larger than the largest ox, but with the most delicate and nutritious flesh, is to be the chief object on which our resources will be expended to acclimatise it in the coming year.' These are only a portion of the new and useful animals we owe or are to owe to the Society; and it will be allowed that they constitute a goodly list for one year."

Iceland Falcon (Falco islandicus) *in Shetland.*—On the 18th of the present month a bird of this species, in flying from the persecution of a flock of gulls and hooded crows, passed sufficiently near for me to obtain a long though unsuccessful shot at it. A wounded bird, probably the same individual, has since been seen in this neighbourhood. I also observed another, of much darker colour, dash across the garden a few days ago.—*Henry L. Saxby; Balta Sound, Shetland, February* 28, 1863.

Hen Harrier (Falco cyaneus) *at Eastbourne.*—A fine female hen harrier was shot on Saturday, the 24th of January, on Mr. Boyes' farm, near Old Eastbourne, by a man named George Baulcombe, who has brought it me for examination. Although females are frequently seen, and several have passed through my hands, I never observed or obtained an adult male in this locality.—*John Dutton; South Street, Eastbourne, January* 26, 1863.

Shrike and Yellowhammer.—On the 25th of February one of my boys found a yellowhammer impaled on a long and strong thorn in a quick-set hedge, the work, doubtless, of the gray shrike, which I have seen here at this season on several occasions —and boy-like removed it from the thorn, which was driven right through its breast. But instead of taking it quite away he laid it on the hedge again, at a little distance from the place of suspension. On his mentioning the occurrence to me I made two or three remarks, which had the effect of causing him to look at the place again as he passed. The bird was once more stuck upon the same thorn as before. Yesterday he was there again, and the yellowhammer remained *in statu quo.* This is curious, as seeming to show that the shrike remembered his pantry in the first instance, but has since either forgotten or learnt to despise its contents.—*J. C. Atkinson; Danby-in-Cleveland, March* 4, 1863.

Occurrence of a White Redwing (Turdus iliacus) *in Norfolk.*—When in Lynn this forenoon I called in at the shop of a birdstuffer there, Mr. W. Wilson, who showed me a very fine albino of the common redwing, which was shot lately in Norfolk, and close to Lynn. It was very nearly white, with only here and there faint cream-coloured markings, and in pretty good condition.—*Henry E. Dresser; February* 24, 1863.

The Blackbird (Turdus merula) *Singing in February.*—On the 27th of February the blackbird here was in full song. I do not remember ever having heard it singing here in any former year so soon by two or three weeks.—*J. C. Atkinson; Danby-in-Cleveland, March* 4, 1863.

Note on the Dartford Warbler. On the 16th of February I shot a fine specimen of the Dartford Warbler on Beeston Hill, Sussex, one of the South Down range of hills. As the author of 'Ornithological Rambles' considers it a scarce bird in that county a record of its capture may be interesting. When first seen the bird rose from some thick furze, and at the height of about five feet above the bush remained dancing and jerking in the air just like a whitethroat, singing noisily all the while. As I was looking on with delight a second, no doubt the mate, appeared suddenly on the top of a bush hard by, but as quickly dived out of sight again. After watching the bird nearest to me for some time,—now creeping like a mouse among the furze stalks, now appearing suddenly on the highest spray of a bush, but only for an instant, when it would either dive in out of sight or fly away with a short jerky flight (not unlike that of the longtailed tit) to another bush,—I began to think of securing the prize for my collection; but it was no easy matter to get a shot, because the furze was so thick, the birds were only seen for a few seconds at a time, and again because the shot I had with me was too heavy except at a long distance, when the birds were of course more difficult to see. I found also that unlike most other birds that will fly out at once on disturbing the bush they are in, these warblers remain hid until all is quiet, when they again creep out, uttering two shrill notes, and make for the highest twig of the bush, from whence to take flight to another. By keeping perfectly still therefore for some time, with my eyes fixed on the spot where I had last seen one of the pair, my patience was at last rewarded, and I got a shot. It proved to be a male in fine plumage, and is now in my birdstuffer's hands for preservation. A friend who was with me tried hard to secure the other bird, pursuing it for a long way through brambles and furze, encountering thorns and scratches innumerable, but all to no purpose; he suddenly lost sight of it, and it never appeared again. I regret that I did not examine the contents of the stomach of my specimen. I forgot to do so until too late. It appears wonderful to think how so delicate a bird as the Dartford warbler can weather our climate during the winter months, and in so exposed a situation too as the top of the South Downs.—*J. E. Harting; Kingsbury, Middlesex, March* 8, 1863.

The Humming Bird's Tongue.—In your review of Mr. Gould's magnificent 'Trochilidæ' your description of the tongue in this family, though correct so far as it goes, is incomplete. You say that you have had no opportunity of examining the organ, and I do not think that the closest examination would be adequate in the dried state. Possibly Mr. Gould himself has made no other, and I therefore beg to supplement your observations with the following notes on the tongue of the recent T. Polytmus, which I extract from my 'Birds of Jamaica,' p. 110, and with the accompanying sketches, carefully made at the time, which have never been published. "The tongue of this species (and doubtless others have a similar conformation) presents, when recent, the appearance of two tubes laid side by side, united for half their length, but separate for the remainder. Their substance is transparent, in the same degree as a good quill, which they much resemble; each tube is formed by a lamina rolled up, yet not so as to bring the edges into actual contact, for there is a longitudinal fissure on the outer side, running up considerably higher than the junction of the tube; into this fissure the point of a pin may be inserted and moved up and down the length. Near the tip the outer edge of each lamina ceases to be convoluted, but is spread out and split at the margin into irregular fimbriæ, which point backward, somewhat like the vane of a feather; these are not barbs, however, but simply soft and flexible points, such as might be produced by snipping diagonally the edge of a strip of paper. I conjecture that the nectar of flowers is pumped up the tubes, and that minute insects are caught, when in flower, in these spoon-like tips, their minute limbs being perhaps entangled in the fimbriæ, after which the tongue is retracted into the beak, and the insect swallowed by the ordinary process, as doubtless those are which are captured with the beak in flight. I do not thoroughly understand the mode by which liquids are taken up by a humming bird's tongue, though I have carefully watched the process. If syrup be presented to one in a quill, the tongue is protruded for about half an inch into the liquor, the beak resting in the pen, as it is held horizontal. There is a slight but rapid and constant projection and retraction of the tubes, and the liquor disappears very fast, perhaps by capillary attraction, perhaps by a sort of pumping, certainly not by licking."—*P. H. Gosse; Sandhurst, Torquay.*

Fig. 1.

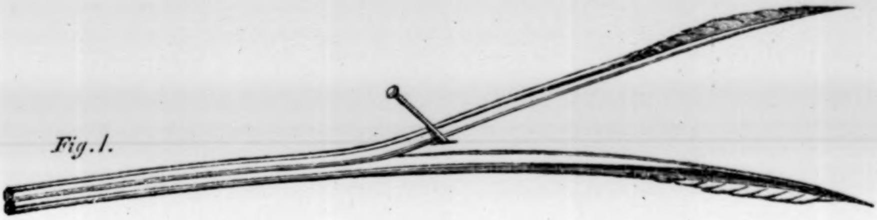


Fig. 2.

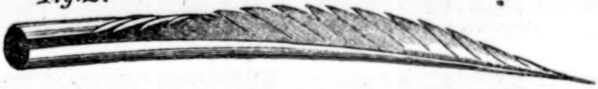


Fig. 1 represents the tongue in Trochilus polytmus, considerably magnified; the terminal filaments kept asunder by means of a pin.
Fig. 2. The extremity of the left filament still more magnified.

Who are the Humming Bird's Relations? By A. R. Wallace, Esq., F.L.S.

In your last number you have thrown down a gage of battle which I willingly take up. I beg to be allowed to say a few words in favour of the humble swift, who claims a hearing through me, his unworthy champion, to prove his undoubted, though somewhat distant, cousinship to the great and wealthy family of the Hummers; and to show that those Indian sun-birds who have so long held that honoured place in public estimation come of a different stock altogether,—very ancient and highly respectable no doubt, but still quite unworthy of the high position in which their too-partial friends have placed them.

Misled by similarity of dress and by a general resemblance in size and habits, and owing perhaps to the fact that inhabiting respectively the Eastern and Western tropics few naturalists have enjoyed a personal acquaintance with both families, and thus been enabled to detect the real and important differences hidden beneath the jewelled robes with which Nature has alike decked them, all authors on Ornithology had placed the Trochilidæ near the Nectarinidæ and Meliphagidæ, till Prince Bonaparte, in his 'Conspectus Generum Avium,' published in 1850, separated them widely from these groups, and placed them immediately after the swifts (Cypselidæ). In 1856, in a paper on the "Natural Arrangement of Birds," published in the 'Annals of Natural History' (p. 193), I classed them as a very aberrant group of Fissirostres, and believe I was the first writer, at least in England, to give any reasons for so placing them.

Before proceeding to state what these reasons are it is necessary to make a few observations on some important principles of classification. It is now generally admitted that for the purpose of determining obscure and distant affinities we should examine those parts of an animal which have little or no direct influence on its habits and general economy. The classificatory value of an organ is in inverse proportion to its adaptability to special uses. By this means we shall penetrate the disguise of external form as adapted to similarities of food and habits, and arrive at the true and essential differences that underlie them. We thus determine that the Cetacea are not fishes, though judging from external form and habits alone we should certainly so class them, because the essential mammalian characters, which are anatomical and physiological, remain highly developed. So, though there are Marsupials which take upon themselves the exact form, habits and mode of life of Rodents or Carnivora, yet minute details of structure in the skull and skeleton, and their physiological peculiarities are universally held to separate them completely from these orders. Among birds the hornbills and the toucans may be said to have the same general form, to agree strikingly in their enormous bills, in their general habits, their food, and their mode of taking it,—yet peculiarities in the structure of the feet, of the plumage, and more particularly of the skeleton, show that they have no real affinities, the former approaching the kingfishers and the latter the cuckoos.

On the other hand we often find peculiarities of organization, which seem specially adapted to the mode of life, become diminished or altogether lost in certain aberrant species of whose affinities notwithstanding there has never been any doubt. For example, the woodpeckers are most strikingly characterised by the extensile tongue with *os hyoides* prolonged over the head, exactly as in hummers, and also by the rigid and pointed tail; but in one group (Sasia and Picumnus) the tail becomes quite soft, while the tongue remains fully developed; in another (Meiglyptes brunneus) the characteristic tail remains while the prolonged *os hyoides* has entirely disappeared, and the tongue has consequently lost its peculiar extensile power; yet in both cases the characters of the sternum, the feet and the plumage show that the birds are true woodpeckers, and the food and general habits remain unaltered. In like manner the bill may undergo immense changes from the smallest size in some goatsuckers to the enormous horny mandibles of Podargus, without at all invalidating the affinities of those birds for each other; or the long feathery tongue of the toucan may differ from that of any other bird, and yet not overcome the force of the anatomical and other evidence which shows that the barbets and the cuckoos are their undoubted allies.

The skeleton, therefore, and especially the sternum, offers us an almost infallible guide in doubtful cases, as indicating deeper seated affinities than those shown by organs which are continually modified in accordance with varying conditions of existence. Another guide of this kind is furnished by the egg. This has a characteristic form and colour, and a peculiar texture of surface which runs unchanged through whole genera and families which are really related to each other, however much they may differ in outward form and habits. When, therefore, these two kinds of evidence coincide in indicating an affinity, which is in other respects doubtful, they may be considered as almost infallible. Now, in the case of the humming birds, we have this evidence. Their sternum and eggs resemble those of swifts much more than they do those of any other birds. Nor is this by any means their only likeness, for in many important points of general structure the two closely agree. If any one will take a swift of the genus Collocalia (the constructor of the edible nest) and also one of the eastern tree swifts (*Dendrochelidon cornatus*), he must be struck by the resemblance of these to the larger hummers in everything but the bill. The small size, the immense pectoral muscles, the short and powerful wing-bones and the enormously developed quills, are points of coincidence of great importance. The Dendrochelidon also makes an approach to the brilliant metallic tints of the hummers, and its long white whisker-plumes, erectile crest and immensely forked tail, remind us of some of the eccentricities of that wonderful group of birds. Here, too, we have the first quill-feather longer than all the others, a peculiarity found in no other family of Passeres but the Trochilidæ and the Cypselidæ, which further agree in having each but ten feathers in the tail. The feet also strikingly resemble each other, in both being small, with very short tarsi, short and powerful toes, with short greatly curved claws, a dilated sole, the hind toe and claw always shorter than the others, and a great grasping power. The bill and tongue offer the sole important points of difference, but, on the principles before alluded to, they are of less importance than the points of agreement, because, being organs directly concerned in maintaining the existence of the birds, they are modified to suit the very different habits of the two families. Moreover, in a very young state, the difference is scarcely perceptible. In a pair of nestling hummers which I kept alive some days by feeding them with minute insects, which they greedily devoured, while they showed repugnance to every kind of syrup, which, therefore, probably only enters into the diet of the adult birds; I observed that the beak was short and triangular, with a very wide gape,—in fact, just the beak of a swift. I am sorry I neglected to examine the tongue of these young birds, but I have little doubt it would have been simple, or only showing a slight approach towards the tubular form. The formation of such a tongue out of one of the ordinary flat horny type is very easily conceivable. It has only to become lengthened and dilated at the margins, which gradually curl in on each side till they meet, forming a double, or rather reniform, tube. The hummer's tongue is really flat, like that of any other bird, the inrolled edges not being united at their line of contact, so that, in their fresh state, it may be flattened out into a long and very delicate ribband. The end of this tongue is fibrous, and the act of suction would no doubt secure minute flower-frequenting insects as well as pump up nectar; and that insects form the most common contents of the stomach I can assert from the examination of scores of specimens of many different species.

We will now consider what are the affinities of the Nectarinidæ, or sun-birds of the East; and at starting I will concede a point, which you, Mr. Editor, were not perhaps prepared for. I can state, from careful observation, that the tongue of the true sun-birds is really tubular, and exactly similar to that organ in the hummers, and the *os hyoides* is also partially extended over the head, so as to give some degree of extensile and retractile power. From this fact, however, I simply draw the conclusion that the structure of the tongue, though useful in confirming the affinities of genera, is not of sufficient importance to determine the relation of families when placed in opposition to other more deeply-seated anatomical and physiological characters. I can imagine how the tongue may become profoundly modified by variation and natural selection, to adapt it to some special purpose in the economy of the bird; but I cannot believe that the sternum (whose characteristic form has no immediate connection with the habits of the species) should almost exactly resemble that of quite an unconnected family, and differ altogether from that with which it is really allied; still less that the independent evidence of the egg should confirm the same false relationship.

A further examination, too, will show us that the sun-birds are quite as sharply separated by the tubular tongue from their undoubted allies, as the hummers are from the swifts. The little birds of the genus Diceum have always been considered to come in the family of the sun-birds, and are undoubtedly closely allied to them, yet their tongue is short, simple, and merely split at the point. The honey-suckers of Australia and India agree closely with the sun-birds in general structure, in the form of the sternum, the shortness of wing, the length and strength of the leg (in which they both exceed most birds of their size), the large toes, the very long and powerful hind toe and claw, and in having twelve tail-feathers (in all which characters they are totally opposed to the hummers), yet the tongue is flat, of moderate length and terminating in a brush, produced by repeated splittings of the tip.

Now if the one solitary character of the retractile tubular tongue is sufficient to bring together two families so totally distinct in every other respect as the sun-birds and the hummers, it must also be held sufficient to separate them from every other family and to constitute them a distinct order of birds.

But I think I have shown that we have no reason whatever to give such importance to the modifications of the tongue. We have here, it appears to me, a most instructive example of how—when two totally distinct groups of organized beings, with some general resemblances of size and outward form, come to be specialised for a similar mode of life—Nature by means of natural selection may occasionally modify the same organ in each, in the same way, quite independently of each other.

The case of the sun-birds confirms my view of the true function of the tubular extensile tongue being primarily the capture of minute flower-frequenting insects; for those possessed of this organ and the almost equally extensible brush-tipped tongue, make insects a common part of their food, whereas the simple-tongued genera—as Diceum, Phyllornis and the American Careba—feed almost exclusively on soft fruits. The Arachnotheræ, the most highly developed of the true sun-birds, live principally on spiders and nectar, and I have often seen them fluttering in the air at flower-bunches or a sap-exuding palm, thus imitating the action of the hummer as far as their very different organization will permit.

It is worthy of remark that the true allies of sun-birds in America, the beautiful little Carebidæ, which might naturally be expected to show some sort of transition to the hummers if there were any real connection between the groups, are still farther removed from them, and have never been supposed by any observer or naturalist to have the slightest affinity with them, though obtaining much of their food from flowers in a somewhat similar manner.

The sun-birds, honeysuckers and allied groups are, I believe, related intimately to the Epimachidæ and paradise birds, with which they agree in general internal structure, in the powerful and highly developed grasping leg, in their activity and general high organization and special adaptation to a purely arboreal existence; and this affinity is most beautifully shown in the little tufts of plumes from the breast and flanks which appear in several distinct genera of these birds (Arachnothera, Nectarinia, Moho, Prosthemadera and Ptilotis), and which form a most constant and remarkable character in the Paridiseas. The wonderful Neomorpha Gouldii (undoubtedly allied to this great group of families), in which the bills of the two sexes differ so remarkably in length and curvature that, judging from that organ alone, they might be placed in distinct genera or even different families, tells us most plainly that here the bill has become highly variable, and must be expected to differ among birds otherwise intimately allied. A case in point is that of the Paradiseidæ and Epimachidæ, families which have been placed in distinct orders of birds owing to the difference of their bills, but which, a knowledge of their internal and external structure, their food and habits, enables us to decide are most closely related, so much so that they will probably have to form ultimately a single family.

In conclusion of this somewhat lengthy exposition I would express my firm conviction, which I trust some of your readers will share with me, that the sun-bird and the hummer have not a shadow of true affinity, the former being a specialised form of an extensive group of typical Passeres, the latter essentially a swift, profoundly modified for an aërial and flower-frequenting existence, but still bearing in many important peculiarities of structure the unmistakeable evidences of a common ancestry.

ALFRED R. WALLACE.

Change of Plumage in the Crossbills.—The common crossbills are unusually numerous in our forests this winter, owing to the abundant supply of fir cones; but the parrot crossbills are rare, and I observed very little fruit on the pines. Having worked out the different changes of plumage in the pine grosbeak pretty satisfactorily to myself while at Quickiock [a description of which will be found at Zool. 8001 and 8003], I am now studying the crossbills. I have made but little progress yet. I have, however, proved one fact—that, contrary to the opinion of some naturalists, the young male after the first month does not resemble the female; and I have also (contrary to my own opinion) proved that the young males do not attain the red plumage at the first moult. Four specimens of young males and two females (all bred this year) are now set before me. These were all killed on the 12th of November, and the plumage is this. On the belly, sides and breast are some of the dark-streaked feathers of the nest plumage; rump bright yellow-red; upper plumage dull green, but all the feathers edged with red-yellow, brightest on the head; breast same as the rump, but hardly so bright. The young females dark green, with a faint yellow breast and a faint tinge of bright yellow (not yellow-red) on the rump; head as in the old birds. Now it will be interesting to watch the gradual change of plumage in the young males, which I think (but this is only my own supposition, remaining to be proved) will during the course of the winter gradually become red (in time for next breeding season), by the yellow-red changing to a deeper red, and not by a moult. I hope in the spring to be able to clear up much of the mystery that still envelopes the change of plumage of these birds. We have just now capital hunting weather, rainy and mild, but no winter; and notwithstanding we have plenty of rowan berries the waxwings have not yet come down, although I saw a small flock five weeks ago, when we had one night's snow. We have a few pine grosbeaks.—*Mr. Wheelwright; Gardsjö, Sweden, November* 15, 1862.—*In the 'Field.'*

Greenfinch (Loxia chloris) *in Shetland.*—One was shot from a flock of twites last autumn. Another was obtained in the same manner a few years ago.—*Henry L. Saxby; Balta Sound, Shetland, February* 28, 1863.

Cuckoos Laying in a Greenhouse.—On reading the account of the deposition of the cuckoo's egg in the nests of other birds I am induced to state what has come under my observation during a twenty years' residence in Radnorshire, on the banks of the River Wye. At Garnon's, in Herefordshire, eight miles from Hereford, the seat of the late Sir John Cotterell, his gardener had two or three times seen a cuckoo go out of the green house in the morning when he opened the door, and a day or two afterwards, as he was watering the plants, which were planted in pots and placed on stands in the greenhouse, he discovered a water wagtail's nest built in one of them, with a cuckoo's egg in it along with its own eggs. Now the most singular thing was that the only way the cuckoo could and did come in and out of the greenhouse was by a glass door or opening, to give air and ventilation to the plants, not larger than ten inches by six. The cuckoo's egg was hatched, the bird brought up by the water wagtails, suffered to fly when old enough, and made its escape out of the greenhouse by the same small door or opening at which the old cuckoo came in. On walking across a large common at the back of my house I discovered a young cuckoo just fledged in a woodlark's nest, and which young cuckoo, I am sorry to say, was not suffered to fly, for some unlucky boys stoned it to death. My idea is that the cuckoo very often lays its egg in a ground bird's nest. A friend of mine sent me a titlark's nest with a cuckoo's egg in it besides two of its own. As he was walking across a large hill he trod on a gorse bush, and a titlark flew out, which induced him to look closely into the bush, when he discovered the nest. I also received from a friend, the Rev. E. Benyon, living at Culford Hall, Suffolk, four miles from Bury St. Edmunds, a reed warbler's nest, containing two of its own eggs and a cuckoo's. The nest was built in some high reeds, and growing on a large piece of water: it was discovered in the reeds by the men when cutting them for the purpose of thatching the ricks, and was built about two feet over the edge of the water. I have mentioned this singular occurrence to many naturalists with whom I am acquainted, and they never heard of an instance of the sort before. This nest was found nine years ago, and my friend gave orders to the men to take particular notice and care of the nest and eggs should they find one with a cuckoo's egg in it, but none have been found since that time, and the reeds are cut every year, at the time when the reed warblers are sitting on their eggs. I have the nest now in my possession, preserved with the reed warbler's and cuckoo's egg in it, and should feel very happy to show it to any naturalist who might wish to see it. I mentioned the circumstance to my old and much-lamented friend, William Yarrell, who said he never heard of an instance before, and had he not had the third edition of his excellent and well got up work on 'British Birds' in the printer's hands at the time, getting ready for publication, it would have been noted in that work.—*J. W. Clutterbuck; 9, Queen's Gate Gardens, South Kensington, March* 17, 1863.

Pheasants in New Zealand.—The increase of the pheasants imported into New Zealand has caused the following remarks in the 'Daily Southern Cross' of the 27th of October:—"We have heard complaints in several quarters that pheasants have increased so much in certain districts as to become a pest; but although they may do some damage, still the good they do by destroying insects far more than counterbalances the evil. Those who attempt to farm in this province know how much they suffer from crickets and caterpillars; and when they learn that in the stomach of a longtail recently killed no fewer than three hundred crickets were found they will look with greater favour on a bird which destroys so many insect enemies at a single meal. At the same time we do not wish for an undue increase of male birds, because as they prevent the hens from sitting they tend to diminish rather than increase the number of young broods."

The Sandpiper Diving.—When I mentioned the sandpiper diving (Zool. 8195), it was not as a *lusus naturæ* but simply as a fact hitherto little known, at least in Ireland. It is, however, curious that out of the three closely allied families Totanus, Scolopax and Tringa, only one species (T. hypoleucos), and that in the family of the three most remote from that of Gallinula, is known, I believe, to have this capability; certainly no other species, to my knowledge, and I have had considerable experience, dive. When other species are proved to dive then the fact will be nothing remarkable, except that habits hitherto generally unknown will be added to the life-histories of these interesting birds. Captain Hadfield says in his paper (Zool. 8447), "But had it not been for Mr. Leven's assertion that he had noticed their diving 'on one or two occasions while the birds were amusing themselves on the shore or bank of the stream,' there would, I think, be nothing very remarkable." This I consider rather inconsistent, for when a bird can dive for safety can it not also dive for other reasons—food or pleasure? My chief object in writing my first paper was to learn from correspondents if the bird was known to dive for food (see my second last sentence, Zool. 8196). My supposition seems to have been satisfactorily confirmed by Mr. Leven's paper (Zool. 8237), and again by the Rev. G. C. Green, who mentions (Zool. 8283), "and saw it occasionally run on the bottom." As to unwebbed water birds swimming, surely no one doubts this fact when even land birds can propel themselves through water by their feet.—*H. Blake-Knox ; 49, Pulteney Street, Bath, March* 5, 1863.

Woodcock (Scolopax rusticola) *in Shetland.*—This morning I met with one among the heather upon the side of the hill above Clugan. This is a very rare visitor, only one other instance of its occurrence having been recorded, although it is rather common in Orkney.—*Henry L. Saxby ; Balta Sound, Shetland, February* 28, 1863.

Common Snipe (Scolopax gallinago).—The editorial query (Zool. 8447) as to what the common snipe of Europe is to be called if the Scolopax gallinago of America is a distinct species, is more readily asked than answered. It might be easier to say what it ought not to be called. For instance, it should not, according to Macgillivray, be named the bleating snipe; nor should it have been referred to by Wilson as the English snipe. It is called by Buffon and Cuvier *la bécassine*, and by Temminck, Montagu and other authors the common snipe, and so it is both in England and on the continent of Europe; but as species more common and numerous still are found both in Asia and America it might perhaps be better named. I cannot answer for the former being distinct, having, when in India, failed to examine and compare them. Temminck says (ii. 677) that the common European snipe only differs from that of North America by being some shades darker, whereas the reverse of this is the case; see description of the latter (Zool. 8285).—*H. Hadfield ; Ventnor, Isle of Wight, March* 8, 1863.

Moorhen (Gallinula chloropus) *in Shetland.*—Several examples have occurred this winter. Early in January I saw one swimming near the shore in Bressay Sound.—*Henry L. Saxby ; Balta Sound, Shetland, February* 28, 1863.

Pintail Duck (Anas acuta) *in Shetland.*—A male was shot in this island last July, but whether it was alone or not I have been unable to ascertain.—*Id.*

Pomarine Skua (Lestris pomarinus) *in Shetland.*—One, said to be a male, was shot in the island of Bressay this winter by the Rev. Z. M. Hamilton. I have in my collection a specimen which was shot at Scarv two years ago.—*Id.*

Diary of the Laying of the Emeus at Brockham, in 1863.—

					WEIGHT.
The first,	on January	2, at	4—4¼	P. M.	1 lb. 2½ oz.
„ second,	„	6, „	4—4¼	„	1 „ 5½ „
„ third,	„	10, „	3¼	„	1 „ 6¼ „
„ fourth,	„	14, „	3½	„	1 „ 7 „
„ fifth,	„	17, about	5	„	1 „ 6 „
„ sixth,	„	20, „	4½	„	1 „ 6 „
„ seventh,	„	23, at	4—5	„	1 „ 6¼ „
„ eighth,	„	26, before	5	„	1 „ 7 „
„ ninth,	„	29, at	4—5	„	1 „ 7 „
„ tenth,	on February	1, about	4½	„	1 „ 6½ „
„ eleventh,	„	4, not at	home.		1 „ 7 „
„ twelfth,	„	7, before	5	P. M.	1 „ 6½ „
„ thirteenth,	„	10, „	5	„	1 „ 7 „
„ fourteenth,	„	13, at	4¼—½	„	1 „ 7 „
„ fifteenth,	„	16, about	5	„	1 „ 6¾ „
„ sixteenth,	„	19, at	4¼—½	„	1 „ 7 „
„ seventeenth,	„	22, „	4¼	„	1 „ 6¾ „

	WEIGHT.
The eighteenth, on February 25, before 3½ P. M. . .	1 lb. 6¾ oz.
„ nineteenth, „ 28, about 4 „ . .	1 „ 6¾ „
„ twentieth, on March 3, at 4¾ „ . .	1 „ 7 „

My emeu began laying this season on the second day of the year, and continued, the next three being laid at intervals of four days, and then one every third day, with the utmost regularity, even as to the time of day, which never varied more than an hour on either side of four o'clock in the afternoon. The batch has been much larger, and the average heavier than the two preceding seasons. The male bird did not take to the nest this time till after the laying of the twentieth egg, which occurred on the 3rd of the present month. On the 5th the bird was finally settled on thirteen of the eggs. Four other eggs were laid in the nest after the bird began sitting. As usual, the sitting is very close. The first view obtained of the contents of the nest was on the 9th, when two more eggs were found to be added. The bird at large was seen to deposit another on the 12th. No further view was obtained of the nest till the 21st, when there were found to be seventeen eggs in it. Three of these were removed, under the idea that the number was greater than the bird could do justice to. It was intended to take away four, but the male bird was too rapid in resuming possession of them, the female being all the time in a state of considerable excitement.—*William Bennett; Brockham Lodge, March* 23, 1863.

Adder in February. On Saturday, the 21st of February, as I was opening an ancient tumulus or grave-hill on the Skelton Moors, my spade came in contact, at some six or seven inches below the ling on the surface, with a viper of moderate dimensions. The blow of the spade had practically disabled the poor creature, by an injury inflicted at a point about one-third of its whole length from the head. It was still, however, quite lively or wide-awake, and I should not have liked to trust my finger to its forbearance.—*J. C. Atkinson; Danby-in-Cleveland, March* 8, 1863.

Occurrence of Drummond's Echiodon (E. Drummondii) *at Banff.*—No fewer than six specimens of the above curious fish, varying from four to five inches in length, were procured here on Monday last. The teeth, from which the genus derives its name, are most formidable-looking weapons, even in these small specimens. The spine, too, at the back of the head, on the dorsal ridge, is very conspicuous. These two characteristics are sufficient of themselves to distinguish the species. Although my specimens were all fresh, in fact I took most of them alive, still I could discover no scales. If any reader of the 'Zoologist' may wish to see a specimen I shall be very happy to gratify him, but all postal expenses must be paid by him.—*Thomas Edward; Banff, March* 19, 1863.

Hexagonal Cells.—I would also mention a paper by Mr. Edwin Brown (Zool. 800
" On the Plan upon which Bees and Wasps construct their Cells." The theory he
announced is, if I mistake not, that propounded by Mr. Waterhouse in the 'Pen
Cyclopædia,' not less, I believe, than twenty-five years ago. I will not trespass
your patience by reiterating my own views of this theory, having done so in vario
communications to this Society long ago, but I will call attention to one or two poin
Mr. Brown says, " Every cell during its progress is impinged upon by six other cel
and, as all progress at the same time, produce inevitably the hexagonal structur
In order to prove that it is not necessary that a cell should be impinged upon by s
others, I will refer Mr. Brown to the sixth plate that illustrates my 'Catalogue of t
Vespidæ,' in which a faithful representation of a nest of Icaria guttatipennis is figure
showing six hexagonal cells standing in a row on the branch of a shrub. Again it
stated " It is only when another line of cells is in process of erection that the cells
the outer ring assume a hexagonal shape." This is true, but I possess portions
wasps' combs, or rather the beginnings of combs, in which perhaps twenty are co
pleted, others being only just commenced at their base; the rest are carried up to th
full height; but had the parent wasp or wasps, as the case might be, not intended
have extended the comb beyond that limit I am fully assured the outer walls wo
not have been carried up in angular planes of a hexagon, for in that case the fo
of the outer portion of the cells would be semicircular. But wasps not only bu
hexagonal cells, but sometimes, as is the case with a South-American species, Apo
pallida, they occasionally construct hexagonal combs. Beautiful examples of t
form may be seen in the nest room at the British Museum.—*Frederick Smith in An
versary Address.*

New Insect at the Friends' Institute.—In our London houses two species of ins
may be said to swarm; these are the cockroach and the cricket. Every one knows
infallible cure for these pests, just as every one knows an infallible cure for whoopi
cough and lumbago; every one recommends the cure to his afflicted neighbour,
every human body continues subject to the two complaints, and every human ha
ation shelters the two obnoxious fellow-lodgers. The third fellow-lodger, whic
propose to call Lepismodes inquilinus, and to which I can give no English nam
confined, so far as my knowledge extends, to the building known as the Frie
Institute, 12, Bishopsgate Street Without. Its body is half an inch long, and it
antennæ and tails each half an inch long or rather more, so that the entire lengt
rather more than an inch and a half. Like a judicious epicure it prefers the di
room to every other apartment in the house, and, like an experienced pilferer, its r
bles are entirely nocturnal, concealing itself behind the wainscot by day, and wande
about by night in search of provisions, as sugar, crumbs and other comestibles.
seems to find no very secure footing on the varnished surface of the wainscoting,
this physical infirmity led to its detection; for whilst perambulating the treache
varnish, it frequently lost its hold and was precipitated headlong into cups, sau
sugar-basins or slop-basins, and once in, its infirmity of " poor " or nonprehensile
effectually precluded its escape. The various household utensils which I have
tioned are now used as snares, and the numbers of our fellow-lodgers are thus thi
night after night.—*Edward Newman.*

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1. My own memoranda.
2. Colonel Montagu's 'Ornithological Dictionary.'
3. Mr. Selby's 'Illustrations of Ornithology.'
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6. The 'Letters of Rusticus.'
7. Observations, emendations and additions by Mr. Bond, of Kingsbury, and Mr. Doubleday, of Epping. With the view of making this work as complete as possible, these two gentlemen, our best British ornithologists, have gone over the list, species by species, and, in a manner deserving the warmest and most sincere thanks of all lovers of birds, have corrected whatever they thought erroneous, erased whatever they considered doubtful, and added whatever they believed necessary to make the list complete; so that, as now offered to the public, it must take rank as the most complete descriptive list ever produced on any branch of British Natural History.

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CONTENTS.

By the Banks of the Chu-Kiang, *Arthur Adams, Esq., F.L.S.*, 8457.

FISHES.—Artificial Fish Raising, 8461. Salmon Ova not the Food of the Water Ouzel, 8462. Destruction of Trout Spawn by the Parents, 8463. Note on the Argentine, *Thomas Edward*, 8463.

MOLLUSKS.—Note on Limax marginatus of Müller, *John E. Daniel, Esq.*, 8464. Occurrence of Limax Gagates near South Shields, 8465.

INSECTS.—Entomological Notes, 8465. On Removing Grease, &c., *Rev. Joseph Greene, M.A.*, 8466. Habits of various Lepidoptera, Spring Moths, *F. Beauchamp, Esq.*, 8467. The late J. F. Stephens' Specimens of Lycæna Dorylas, *Henry Doubleday, Esq., F.L.S.*, 8467. Notes on Ino Globulariæ and I. Geryon, *F. Beauchamp, Esq.*, 8468. Lithosia molybdeola, *Rev. Joseph Greene, M.A.*, 8468. Description of the Larva of Melanthia albicillata, *F. Beauchamp, Esq.*, 8468. Occurrence of Dosithea eburnata at Bangor, 8469. Economy of Scotosia undulata, Description of the Larva of Phibalapteryx tersata, Ichneumoned Eggs of Pygæra bucephala, Divorce and re-union of Phibalapteryx falcula, *F. Beauchamp, Esq.*, 8469, 8470. Occurrence of Noctua sobrina at Rannoch, 8470. Note on Agrotis lucernea, Note on the Irish Specimens of Dianthæcia capsophila, *Henry Doubleday, Esq. F.L.S.*, 8471. On the Determination of Dianthæcia capsophila, *C. G. Barrett, Esq.*, 8471. Note on Brephos Parthenias, *F. Beauchamp, Esq.*, 8472. Note on Tinea granella, 8473. Life-Histories of Sawflies, *J. W. May, Esq.*, 8473. Oxypoda umbrata, Notes on Philonthus temporalis and allied Species, *E. C. Rye, Esq.*, 8476.

PROCEEDINGS OF SOCIETIES.—Entomological Society, 8478.

MAMMALIA.—Additional Remarks concerning a Dormouse, *Captain H. Hadfield*, 8481. Occurrence of the Otter near Bath, *H. Blake-Knox, Esq.*, 8482.

Introduction of a new and useful Fauna into Australia, 8483.

BIRDS.—Iceland Falcon in Shetland, *Henry L. Saxby, Esq., F.L.S.*, 8484. Hen Harrier at Eastbourne, *John Dutton, Esq.*, 8484. Shrike and Yellowhammer, *Rev. J. C. Atkinson, M.A.*, 8484. Occurrence of a White Redwing in Norfolk, *Henry E. Dresser, Esq.*, 8484. The Blackbird Singing in February, *Rev. J. C. Atkinson, M.A.*, 8484. Note on the Dartford Warbler, *J. E. Harting, Esq.*, 8485. The Humming Bird's Tongue, *P. H. Gosse, Esq., F.L.S.*, 8485. Who are the Humming Bird's Relations? *A. R. Wallace, Esq., F.L.S.*, 8486. Change of Plumage in the Crossbills, 8492. Greenfinch in Shetland, *Henry L. Saxby, Esq.* 8492. Cuckoos Laying in a Greenhouse, *J. W. Clutterbuck, Esq., F.Z.S.*, 8492. Pheasants in New Zealand, 8493. The Sandpiper Diving, *H. Blake-Knox, Esq.*, 8493. Woodcock in Shetland, *Henry L. Saxby, Esq., F.L.S.*, 8494. Common Snipe, *Captain H. Hadfield*, 8494. Moorhen in Shetland, Pintail Duck in Shetland, *Henry L. Saxby, Esq., F.L.S.*, 8494. Diary of the Laying of the Emeus at Brockham, in 1863, *William Bennett, Esq.*, 8494.

REPTILES.—Adder in February, *Rev. J. C. Atkinson, M.A.*, 8495.

FISHES.—Occurrence of Drummond's Echiodon at Banff, *Thomas Edward*, 8495.

INSECTS.—Hexagonal Cells, 8496. New Insect at the Friends' Institute, *Edward Newman*, 8496.

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